

## **STAFF REPORT**

### **1999 TRIENNIAL REVIEW OF WATER QUALITY CONTROL PLAN SACRAMENTO RIVER BASIN AND SAN JOAQUIN RIVER BASIN**

Water Quality Control Plans (Basin Plans) are mandated by the Federal Clean Water Act and the State Porter-Cologne Water Quality Control Act (Porter-Cologne). Basin Plans provide the framework for protection of water quality in California. Sections 13240-13247 of Porter-Cologne specify what should be included in the Plan and what factors need to be considered and evaluated in adopting or revising a Basin Plan. Basin Plans include identification of beneficial uses, water quality objectives to protect beneficial uses and an implementation program to assure that beneficial uses are protected. Both the Clean Water Act (Section 303(c)) and Porter-Cologne require periodic review of a Basin Plan to keep pace with changes in regulations, technologies, policies and physical changes within the Region. This review is required every three years. The purpose of the triennial review is to (a) evaluate the appropriateness of existing beneficial uses and water quality objectives; (b) identify water quality issues that need to be addressed by revision of the Basin Plan; (c) determine the priority of each water quality issue; and (d) determine which issues can be addressed with existing resources and those which would require additional resources.

This triennial review was initiated in August 1998 when staff circulated a workshop notice to more than 2,000 interested persons. The workshop notice identified potential triennial review issues and requested input on other issues needing review. More than 40 written comments were received. Additional comments were received at a Regional Board workshop held on 21 October 1998.

Staff has reviewed all the written comments and information presented at the workshop. Issues identified by interested persons and Regional Board staff are summarized in Attachment "A". In the attachment, staff has summarized the main points of commenters' concerns and recommendations for basin planning needs and priorities. Comments that were identical or similar have been consolidated. In addition, staff has described what can be done with current resources, the additional resources needed to address the issue and the work that can be done with the additional resources.

#### **Priorities**

Each of the issues presented in Attachment "A" addresses an important concern. To permit analysis, the issues were grouped into "high", "medium" and "low" priority rankings. The ranking is based on the urgency of the water quality issue being considered and the likelihood that funding resources from other programs will compliment or augment the basin planning activities. The only difference between the high and medium ranking is that some work has been initiated on the high priority issues while no resources are available to work on the medium priority issues. All the other issues were grouped into the low priority.

The following have been shown in Attachment "A" as high priority issues:

- Regulatory Guidance to Address Water Bodies Dominated by NPDES Discharges
- Regulatory Guidance for Salinity and Boron Discharges to San Joaquin River
- OP Pesticide Control Efforts
- Mercury Load Reduction Program (TMDL)
- Dissolved Oxygen Problems in San Joaquin River near Stockton
- Regulatory Policies for Selenium in the San Joaquin River

The following have been shown in Attachment "A" as medium priority issues:

- Policies for Maintaining Water Quality for Drinking Water
- Regulatory Policy for On-Site Disposal Systems
- Temperature Objectives to Protect Spring Run Salmon and Steelhead
- Regulatory Actions in Agricultural Dominated Water Bodies and Agricultural Conveyance Facilities
- Need for Groundwater Survey and Control Policies for Discharges to Groundwater
- Ammonia Objectives
- Chlorine Objectives

## **Funding**

Resources to support basin planning activities are very limited. Prior to 1994, the Regional Board budget supported 3.0 personnel years in the basin planning program. The major source of funds was through the Water Quality Bond Funds. In 1994, this funding source ended and the basin planning program had only 0.5 personnel years remaining. Because of the importance of the basin planning program, the Regional Board transferred funding from the Underground Storage Tank (UST) program to continue the planning effort at 1.8 personnel years. An external audit of the UST program in 1998 however recommended that the funding be transferred back to overcome shortcomings in the UST program. This transfer was completed in late 1998.

The Regional Board annual budget now provides only 0.6 personnel years specifically for water quality control planning. With this budget, the Regional Board must conduct a triennial review and prepare and propose amendments to the Basin Plans that cover the three basins in the Region. In FY 98-99, these resources will be completely used to conduct the present triennial review for the three basins. The next triennial review will be during FY 2001-2002. This leaves 1.2 personnel years divided between the remaining two years (FY 99-2000 and FY 2000-2001) to consider revisions to the Basin Plans.

With existing resources, only one of the high priority issues can be addressed. The funding needs are summarized for the remaining "high" and "medium" priority issues in the Table on the next page. In describing the resource needs in attachment "A", information is provided on resources used from other programs which compliment and augment basin planning activities. Although these outside resources are noted here, they can not be used to complete strictly basin planning activities, including technical and policy review, evaluation of alternative approaches to water quality protection, public outreach, CEQA, economic analyses, public hearing and the other basin planning requirements of the Clean Water Act and Porter Cologne.

## **Comments Needed**

Comments on this staff report and on the proposed priorities for addressing the issues should be submitted to the Regional Board no later than **April 10, 1999**. Staff will review the comments and make final recommendations for Regional Board consideration during the **April 30, 1999** Board meeting to be held at the Regional Board offices located at 3443 Routier Road, Suite A, Sacramento, California.

**1998 Triennial Review**  
**Resource Needs and Allocation for High and Medium Priority Issues**  
**Sacramento and San Joaquin River Basins**

ISSUES	FY 1998-1999		FY 1999-2000		FY 2000 - 2001	
	Staff Required PY	Recommende d Staff Allocation*	Staff Required PY	Recommended Staff Allocation*	Staff Required PY	Recommende d Staff Allocation*
Triennial Review	0.6	0.6	0	0.	0	0.
Effluent Dominated Water Bodies	0.6	0	0.6	0.6	0.6	0.6
Salinity & Boron in San Joaquin River	1.0	0	1.0	0	0.5	0
O P Pesticides	0	0	2.0	0	2.0	0
Mercury Load Reductions	0	0	1.0	0	1.0	0
DO in San Joaquin River near Stockton	0.5	0	0.5	0	0.5	0
Selenium in San Joaquin River	0.4	0	0.8	0	0.4	0
Drinking Water Issues	0	0	1.0	0	1.0	0
On-Site Disposal Systems	0	0	2.0	0	2.0	0
Temperature Objectives to Protect Salmon/Steelhead	0	0	1.0	0	0	0
Ag Dominated/Constructed Waterbodies	0	0	1.5	0	1.5	0
Policy for Discharges to Groundwater	0	0	2.0	0	2.0	0
Ammonia Objectives	0	0	0.5	0	0.5	0
Chlorine Objectives	0	0	0.5	0	0.5	0
<b>TOTAL</b>	<b>3.1</b>	<b>0.6</b>	<b>14.4</b>	<b>0.6</b>	<b>12.5</b>	<b>0.6</b>

\* Allocation based on a total Basin Planning Resource availability of **0.6** py in each fiscal year.

**WATER QUALITY CONTROL PLAN ISSUES  
SACRAMENTO RIVER - SAN JOAQUIN RIVER BASINS**

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**SUMMARY FOR HIGH AND MEDIUM PRIORITY ISSUES**  
**1999 TRIENNIAL REVIEW OF WATER QUALITY CONTROL PLAN**  
**SACRAMENTO AND SAN JOAQUIN RIVER BASINS**

Priority	Title of Issue and Summary	Basin Planning Resource Information
High	<p><b>Regulatory Guidance to Address Water Bodies Dominated by NPDES Discharges.</b></p> <p>In effluent dominated water bodies, it is often difficult and expensive for dischargers to meet water quality objectives because little if any dilution is available. Commenters suggested various alternatives be explored for addressing this issue. Staff proposes to review the alternatives suggested and discuss various scenarios with legal staff and US EPA. Implementation of the preferred alternative will be initiated as resources allow.</p>	<p><u>Current Resources:</u> Propose to use the entire existing Basin Planning budget (0.6 pys in FY 99-2000 and 0.6 pys in FY 2000-2001) to evaluate alternatives and initiate implementation.</p> <p><u>Additional Resource Requirements:</u> The FY 2000-2001 allocation of 0.6 pys may not be adequate to implement all of the actions identified in the preferred alternative, especially if significant Basin Plan revisions are warranted.</p>
High	<p><b>Regulatory Guidance for Salinity and Boron Discharges to San Joaquin River.</b></p> <p>Water quality in the San Joaquin River has degraded significantly since the late 1940s. During this period, salt concentrations in the River, near Vernalis, have doubled and boron levels have increased significantly. Numerous interested persons commented that water quality objectives and implementation plans for salinity and boron were needed in the San Joaquin River watershed. Recognizing the importance of controlling salts in the San Joaquin River and restoring beneficial uses, the Board instructed staff to develop a program to control salts in the San Joaquin River. A work plan for developing a salinity and boron control strategy was presented by staff to the Board in June 1997. Staff is scheduled to propose a Basin Plan amendment, which includes water quality objectives and an implementation plan for salinity and boron by December 1999.</p>	<p><u>Current Resources:</u> None to complete the specific work associated with preparing the Basin Plan amendment, including development of a reasonable implementation program.</p> <p><u>Additional Resource Requirements:</u> 1.0 py annually for several years beginning in FY 99-2000 to complete Basin Plan revisions and oversee implementation.</p> <p><u>Potential Augmentation:</u> Limited resources may be available for some implementation.</p>
High	<p><b>OP Pesticide Control Efforts.</b></p> <p>The organophosphate (OP) pesticides diazinon and chlorpyrifos have been documented at toxic levels in the San Joaquin River, Sacramento River, Feather River, Delta, and other water bodies. These water bodies have been listed by the Regional Board on their Clean Water Act Section 303(d) list of impaired water bodies. Staff has initiated steps to develop TMDLs for the OP pesticides. In order to complete TMDLs for these water bodies, water quality limits need to be established, more load and source information is needed from the Sacramento River watershed and the Delta, and work on management practice development and implementation needs to continue. TMDLs need to be incorporated into Basin Plans. Regional Board staff proposes to work with the Department of Pesticide Regulation and other stakeholders to develop TMDLs that can brought before the Board.</p>	<p><u>Current Resources:</u> None to complete the specific work associated with preparing the Basin Plan amendment component of the TMDLs, including development of reasonable implementation programs.</p> <p><u>Additional Resource Requirements:</u> 2.0 pys annually for several years beginning in FY 2001-2002 to complete Basin Plan revisions and oversee implementation.</p> <p><u>Potential Augmentation:</u> Limited resources may be available for some implementation.</p>

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High	<p><b>Mercury Load Reduction Program (TMDL).</b></p> <p>Mercury has been identified as a problem in the Bay/Delta and its tributaries and in Clear Lake and Lake Berryessa because it accumulates in aquatic organisms to levels that pose a threat to predator species and people that eat fish. Elevated mercury levels can be expected in areas where mercury was mined (Coast Range), where mercury was used to extract gold (Sierra Nevada and Cascade Range), and in downstream water bodies. Because of elevated mercury levels in fish tissue, numerous water bodies, including the Delta, have been included on the Clean Water Act Section 303(d) list of impaired water bodies. TMDLs need to be developed for water bodies impaired by mercury, but these will be complicated and difficult to complete because mercury cycling in the aquatic environment and the accumulation process in aquatic organisms is not well understood. Determining which sources are most important to control in order to protect beneficial uses will not be an easy task. The Regional Board is supporting efforts to complete the needed research and data collection. Using this information, staff plans to work with stakeholders to develop TMDLs</p>	<p><u>Current Resources:</u> None to complete the specific work associated with preparing the Basin Plan amendment component of the TMDLs, including development of reasonable implementation programs.</p> <p><u>Additional Resource Requirements:</u> 2 pys annually for five years beginning in FY 2001-2002 to complete Basin Plan revisions and oversee implementation.</p> <p><u>Potential Augmentation:</u> Limited resources may be available for some implementation.</p>
High	<p><b>Dissolved Oxygen Problems in San Joaquin River near Stockton.</b></p> <p>Low dissolved oxygen concentrations in the San Joaquin River in the vicinity of Stockton annually impact or threaten to impact beneficial uses. Basin Plan water quality objectives (in particular dissolved oxygen) are frequently violated during this period. A computer model developed for Stockton Wastewater Treatment Plant identified ammonia and BOD as the primary cause of the low dissolved oxygen concentrations. The sources are discharges from the treatment plant, and surrounding and upstream point and nonpoint sources. River flow and water temperature, upstream algal blooms, and sediment oxygen demand were identified as key factors influencing dissolved oxygen levels. The City of Stockton supported the need for a comprehensive TMDL to address this problem. Staff agrees with this comment.</p>	<p><u>Current Resources:</u> None</p> <p><u>Additional Resource Requirements:</u> Approximately \$650,000 is required for the load studies and about 0.5 pys would be required for staff per year for three years.</p> <p><u>Potential Augmentation:</u> CALFED has identified the load studies as high priority for funding through an RFP.</p>
High	<p><b>Regulatory Policies for Selenium in the San Joaquin River.</b></p> <p>A number of commenters recommended that TMDL activities related to selenium in the San Joaquin River watershed should be given high priority. Commenters wanted to be assured that contributions from all sources be considered. A 50-mile portion of the San Joaquin River along with tributaries draining the Grassland basin (Mud Slough (north) and Salt Slough) have been included in the Section 303(d) list as impaired by selenium. Selenium control actions were updated in an amendment to the Basin Plan in May 1996. Included in the 1996 amendment were selenium load limits for the 5-years of the first phase control effort. Monthly and annual selenium load limits for discharges to the San Joaquin River are now regulated by Waste Discharge Requirements (WDR). As part of the Basin Plan amendment, the Regional Board committed to review the amendment and its adequacy prior to the end of the 5-year life of the first phase project. Particular focus was on the continued use of load limits and a review of the</p>	<p><u>Current Resources:</u> None</p> <p><u>Additional Resource Requirements:</u> 0.4 pys of basin planning resources is required for 3 years to complete the Basin Plan amendment review and prepare documents for Board consideration. In addition, 0.4 pys for 1 year is needed to review and prepare the needed documentation for a change in a water quality objectives.</p> <p><u>Potential Augmentation:</u> None</p>



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	adequacy of the selenium water quality objective in the San Joaquin River and tributaries. Basin planning activities associated with this issue are: completion of the Basin Plan amendment review, preparation of documents for Board consideration, and preparation of necessary documentation for a change in water quality objectives.	
Medium	<p><b>Policies for Maintaining Water Quality for Drinking Water.</b></p> <p>In response to directives in the 1996 Reauthorization of the federal Safe Drinking Water Act, the US EPA has been developing more stringent regulations with respect to controlling and reducing levels of disinfection by-products (DBPs) and pathogens in drinking water. These regulations are of concern to water purveyors whose source of water is from the Delta because of the relatively high levels of precursors to DBPs in Delta waters and because of the high cost of treatment to comply with the regulations. These new regulations raise issues of concern for constituents, which have not been traditionally regulated by the Regional Board. The California Urban Water Agencies and the Department of Water Resources recommended that the Regional Board develop a drinking water policy that includes water quality objectives and implementation plans for TOC, total dissolved solids, bromide, and pathogens. Staff agrees that a policy is needed.</p>	<p><u>Current Resources:</u> None</p> <p><u>Additional Resource Requirements:</u> 1.0 py for at least two years required to develop a workplan and initiate policy development. An additional \$30,000 in contract funds is also needed for technical support</p> <p><u>Potential Augmentation:</u> CUWA has expressed interest in supporting some of this work.</p>
Medium	<p><b>Policy for On-site Disposal Systems.</b></p> <p>The Board believes that control of individual waste treatment and disposal systems can best be accomplished by county environmental health departments if these departments are strictly enforcing an ordinance that is designed to provide complete protection to ground and surface waters and to public health. The Regional Board established guidelines for siting and operation of individual disposal systems in the Basin Plan. Four tasks need to be accomplished: 1) work with County Health Departments and other stakeholders to review and recommend revisions to the existing guidelines; 2) evaluate the effectiveness of county ordinances and their implementation programs to ensure consistency with the suggested guidelines; 3) revise the Basin Plan to include the recommended revisions; and 4) establish a mechanism for oversight of county implementation to assure compliance with Regional Board guidelines.</p>	<p><u>Current Resources:</u> None</p> <p><u>Additional Resource Requirements:</u> Need to support 2 to 3 pys per year for three years.</p>
Medium	<p><b>Temperature Objectives to Protect Spring Run Salmon and Steelhead.</b></p> <p>The Department of Fish and Game commented that the temperature objective is not adequate in certain key streams critical to spring run salmon and steelhead. The Department provided a list of streams where this was the case. The spring-run Chinook salmon has been listed as Threatened under the California Endangered Species Act. Efforts are currently underway by state and federal agencies and stakeholder groups to protect and possibly enhance these populations. Establishing maximum temperature limits in these streams would help assure their viability and support the (COLD), (SPWN), and (RARE) beneficial uses of streams. Staff agrees that new objectives need to be considered.</p>	<p><u>Current Resources:</u> None</p> <p><u>Additional Resource Requirements:</u> Need to support 1 py for two years.</p>

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Medium	<p><b>Regulatory Actions in Agricultural Dominated Water Bodies and Agricultural Conveyance Facilities.</b></p> <p>The principal concern of commenters and staff are the water bodies that receive agricultural drainage do not achieve full beneficial use and quality restrictions may reduce flow to where the total level of beneficial use is less than without restrictions. Commenters have recommended that the Regional Board consider defining the beneficial uses that are appropriate for these water bodies and the levels of protection (i.e., what water quality objectives should apply) that are needed to protect these beneficial uses. The primary action is to develop a policy of agricultural dominant water bodies.</p>	<p><u>Current Resources:</u> None</p> <p><u>Additional Resource Requirements:</u> At least 1.5 pys for 4 to 5 years to develop a policy.</p>
Medium	<p><b>Need for Groundwater Survey and Control Policies for Discharges to Groundwater.</b></p> <p>Numerous comments have recommended revisions to the Basin Plan that would address cleanup and prevention of groundwater quality problems (specifically, nitrates and salt). Major portions of groundwater basins in the Region contain nitrates and salt at levels that impact beneficial uses. In the absence of a uniform statewide program for dealing with nitrates and salt, the Regional Board should develop a program to address these issues.</p>	<p><u>Current Resources:</u> None</p> <p><u>Additional Resource Requirements:</u> 2 pys and \$100,000 annually to develop a groundwater protection policy for both nitrates and salt.</p>
Medium	<p><b>Ammonia Objectives.</b></p> <p>The Basin Plan does not contain a numerical ammonia limit. In determining permit limits, staff relies on application of the narrative objective. Limits are placed in permits that take into account ammonia toxicity information, receiving water characteristics, available dilution and other considerations. Numerous parties have requested that numerical objectives be established in the Basin Plan and have made recommendations about including averaging periods and suggested specific numerical objective language. Staff agrees that numerical objectives need to be developed.</p>	<p><u>Current Resources:</u> None</p> <p><u>Additional Resource Requirements:</u> 0.5 py, annually, for two years to work with the Department of Fish and Game and other interested parties to develop objectives and present them for Regional Board adoption.</p>
Medium	<p><b>Chlorine Objectives.</b></p> <p>The Basin Plan does not contain a numerical chlorine limit. In determining permit limits, staff relies on application of the narrative objective. Limits are placed in permits that take into account chlorine toxicity information, receiving water characteristics, available dilution and other considerations. The Department of Fish and Game recommended specific chlorine permit limits that should be included in the Basin Plan. The City of Stockton and U.C. Davis have recommended that effluent limits include averaging periods. Adoption of a chlorine objective and residual chlorine limits for permits is needed.</p>	<p><u>Current Resources:</u> None</p> <p><u>Additional Resource Requirements:</u> 0.5 py, annually, for two years to work with the Department of Fish and Game and other interested parties to develop objectives and present them for Regional Board adoption.</p>

## **WATER QUALITY CONTROL PLAN ISSUES SACRAMENTO RIVER - SAN JOAQUIN RIVER BASINS**

**Issue:** **Regulatory Guidance to Address Water Bodies Dominated by NPDES Discharges**

**Discussion:** It is sometimes difficult and expensive for dischargers to meet water quality objectives in water bodies dominated by NPDES discharges. Where little or no dilution is available, the effluent limits are set that are equivalent to numerical objectives contained in the Basin Plan, numerical standards included in the National Toxics Rule, or US EPA water quality criteria (frequently used to assure compliance with narrative toxicity objectives). Common parameters that have proven difficult to meet in typical discharges from wastewater treatment plants include copper, zinc, arsenic, pesticides and various organic compounds. In addition, the water quality objectives for turbidity, temperature, dissolved oxygen and pH are often violated. These four objectives are based on allowing only limited changes to background conditions. Background stream conditions typically fluctuate and respond more quickly to environmental changes (i.e., rainfall, changes in air temperature) than effluents from wastewater treatment facilities. In some cases, wastewater treatment plants are capable of discharging very high quality effluent that would fully protect beneficial uses and yet still be in violation of the Basin Plan. The consistent enhanced flows provided by the wastewater discharge may also enhance some aquatic life beneficial uses but be detrimental to others that respond to the ephemeral nature of the stream. The original conditions in the stream will be changed (sometimes from ephemeral to perennial). There is also the question of whether a discharger should be required to fully protect a beneficial use when the use exists only because of the discharge. On the other hand, it can be argued that the discharge adversely impacted the previous beneficial use (i.e., ephemeral waters have their own unique and beneficial characteristics).

Most of the effluent dominated water bodies have not had site-specific studies completed that identify which beneficial uses are appropriate for them. In the absence of the site-specific studies, beneficial uses are assumed to be the same as for the downstream tributary that is listed in the Basin Plan. Numerous commenters suggested that various alternatives be explored for assigning beneficial uses to effluent dominated water bodies. The alternatives suggested were to a) designate site specific beneficial use designations, b) use “warm” and “cold” designations on a case by case basis rather than applying the tributary rule, c) adopt site specific objectives, or d) develop a policy that would include some provision for granting variances. The California Mining Association recommended that the Regional Board

designate site specific beneficial use designations at the Regional Board hearing.

New beneficial use designations or changes to existing beneficial use designations can only be made through the Basin Plan amendment process. They cannot be designated during the permit adoption process. Because of the number of water bodies where site specific action is needed, alternative policies and actions need to be considered.

Priority: High

Current Action: Staff proposes to review the alternatives suggested by commenters and discuss various scenarios with legal staff and US EPA. A report would be prepared which recommends how best to address this issue and the resources required. Staff recommendations would be brought back before the Regional Board within 1 year.

Current Resources: 0.6 py

Additional Action: Implement the preferred alternative including any necessary revisions to the Basin Plan. Staff work would include public meetings, CEQA analysis, and economic analysis associated with the basin plan revisions. Funding requirements are undetermined.

Additional Resources Requirements: The FY 2000-2001 allocation of 0.6 pys may not be adequate to implement all of the actions identified in the preferred alternative, especially if significant Basin Plan revision are warranted.

**Issue: Regulatory Guidance for Salinity and Boron Discharges to the San Joaquin River**

Discussion: Water quality in the San Joaquin River has degraded significantly since the late 1940s. During this period, salt concentrations in the River, near Vernalis, have doubled and boron levels have increased significantly. These increases are primarily due to reservoir development on the east side tributaries and upper basin for agricultural development, the use of poorer quality Delta water in lieu of San Joaquin River water on west side agricultural lands and drainage from upslope soils on the west side of the San Joaquin Valley. The lower San Joaquin River, namely that part of the River from Mendota Pool to the Delta, along with its tributaries Mud Slough (north) and Salt Slough have been listed in the Section 303(d) list as impaired due to boron and salts. The Clean Water Act requires that

states establish total maximum daily load limits (TMDL) for all Section 303(d) listed water bodies.

During the 1999 Triennial Basin Plan review, numerous interested parties commented that water quality objectives and implementation plans for salinity and boron were needed in the San Joaquin River watershed. One commenter suggested that the objectives should be implemented by adoption of waste discharge requirements. Another recommended that no time should elapse between establishment of water quality objectives and development of a TMDL.

Salinity water quality objectives were adopted by the SWRCB for the San Joaquin River at Vernalis (the mouth of the Sacramento/San Joaquin Rivers Delta) in the Water Quality Control Plan for Salinity in the Sacramento-San Joaquin River Delta. However, this objective is not applicable to the upstream portion of the river. Water quality objectives for boron were adopted in 1988, but were rejected by the US EPA. Present levels of salts and boron have impaired agricultural beneficial uses and interfered with fulfillment of water contract deliveries.

Recognizing the importance of controlling salts in the San Joaquin River and restoring beneficial uses, the Board instructed staff to develop a program to control salts in the San Joaquin River. The Board also identified the development of a Total Maximum Daily Load Model for boron and salts as a high priority. A TMDL provides a means by which to restore the integrity of the water bodies with respect to the pollutant in question by establishing the assimilative capacity of the water body and apportioning loads of the pollutant to the various sources and including a measure of safety.

Priority:

High

Current Action:

A work plan for developing a salinity and boron control strategy was presented by staff to the Board in June 1997. Staff is scheduled to propose a Basin Plan amendment, which includes water quality objectives and an implementation plan for salinity and boron by December 1999. The amendment will incorporate, as necessary, appropriate load reduction limits to satisfy the federal Clean Water Act requirements for adopting TMDLs. Staff will work with stakeholders in the development of the Basin Plan amendment and in the implementation that follows. Primary action includes: working with stakeholders to develop the objectives and implementation plan, preparing the staff reports supporting the amendment, and processing the amendment (completing CEQA, preparing agenda items, conducting hearings and workshops, preparing the record for State Water Board and OAL, conducting peer review, responding to OAL).

The implementation plan will evaluate all reasonable alternatives, including the option of adopting waste discharge requirements.

**Current Resources:**

It is anticipated that nonpoint source (NPS) resources and a long term agricultural drainage budget augmentation will support most of the work needed to develop a proposed Basin Plan amendment. 2 pys annually for the next three years are required. If however, federal NPS resources cannot be used for development of this Basin Plan amendment, resources from the basin planning budget or other program would be needed to complete this work. Federal NPS funds for 1.0 personnel years for 2 years are needed to complete this work.

**Additional Action:**

Adoption into Basin Plan and followup on implementation.

**Additional Resources  
Requirements:**

1.0 pys for several years.

**Issue:**

**OP Pesticide Control Efforts**

**Discussion:**

The organophosphate (OP) pesticides diazinon and chlorpyrifos have been documented at toxic levels in numerous surface water bodies. Diazinon has been documented at toxic levels in the San Joaquin River, Sacramento River, Feather River, the Delta and tributaries to these water bodies. Chlorpyrifos has been documented at toxic levels in the San Joaquin River, the Delta and tributaries to these waters. These water bodies have been listed by the Regional Board on their Clean Water Act Section 303(d) list of impaired water bodies. The Clean Water Act mandates that the Regional Board develop load reduction programs to resolve these water quality problems through a TMDL process. In addition the implementation chapter of the Basin Plan outlines a specific review process that the Regional Board must follow to address pesticide problems that are identified. G. Fred Lee stated that the OP pesticides are not being regulated under current Basin Plan or Clean Water Act requirements.

The Regional Board has not conducted a comprehensive hearing for the purpose of reviewing information about the OP pesticide problem and efforts to correct the problem. The Board has conducted periodic reviews of the rice pesticide program. The Regional Board has also reviewed some information on the OP pesticides, in connection with the Bay Protection and Toxic Cleanup Program.

The Regional Board has initiated steps to address the OP pesticide problem through the Federal Clean Water Act Section 303(d) process, which requires development of TMDLs. As the TMDL process

progresses, the Regional Board is expected to hold public hearings and meetings to approve elements of the TMDL. These public hearings will provide the review process that was established in the Basin Plan for addressing problem pesticides. When the Regional Board adopted the Clean Water Act Section 303(d) list in 1998, development of TMDLs for the San Joaquin River, Sacramento River, Feather River and Delta for the OP pesticides was identified as a high priority activity.

The TMDL is the maximum load of a pollutant that can be safely assimilated by a water body without violating a water quality standard. The load, including a safety factor is then allocated among various sources. The load allocations must then be incorporated into the Basin Plan along with a plan to implement the allocations and description of a monitoring program to verify the load reductions and to assess compliance with water quality standards. In order to complete a TMDL, information is required about the levels of pollutants that are appropriate for receiving waters, the sources of pollutants, the load reductions that are needed and mechanisms for achieving the needed reductions.

Priority:

High

Current Action:

Staff has initiated steps to develop TMDLs for the OP pesticides. Beginning in about 1988, first in the San Joaquin River watershed, then later in the Delta and Sacramento River watershed, staff of the Regional Board, in cooperation with other agencies, collected information to document the water quality problems associated with the OP pesticides. Several reports and data summaries have described situation. Staff of the Regional Board, Department of Pesticide Regulation, and others have worked with stakeholder groups, industry representatives, the various commodity Boards, the pesticide registrants and environmental groups to support efforts to develop management practices to reduce the levels of the pesticides reaching surface waters. CALFED has funded numerous projects directed toward development of these practices in agricultural and urban settings. Additional resources have been allocated to address questions about the ecological significance of observed levels of pesticides in and around the Delta. The Department of Fish and Game has been given resources to complete their work on criteria for chlorpyrifos and diazinon. In the San Joaquin River, the loads and sources of pesticides have been well defined during drought periods. More information is still needed in the Delta and Sacramento River watershed.

In order to complete TMDLs, water quality objectives for the OP pesticides need to be established for all four water bodies, more load and source information is needed from the Sacramento River watershed and the Delta, and work on management practice development and implementation needs to continue.

**Current Resources:**

Regional Board staff proposes to work with the Department of Pesticide Regulation and other stakeholders to develop a TMDL that can be brought before the Board as soon as possible. A comprehensive workplan to complete this work is under development and should be completed before the Board Hearing. Resources to complete this work are estimated to be about 3 pys and \$300,000 per year in contracts for three years. Budget projections suggest that most of these resource needs will be met.

**Additional Action:**

Preparing the TMDL for adoption into the Basin Plan and overseeing implementation. Regional Board staff need to develop the goals for the TMDL program. Basin planning resources would be needed to develop the appropriate water quality objectives for OP pesticides.

**Additional Resources  
Requirements:**

The preparation of water quality objectives and adopting the TMDL into the Basin Plan and overseeing implementation would require 20 pys annually for several years.

**Issue:**

**Mercury Load Reduction Program (TMDL)**

**Discussion:**

Mercury has been identified as a problem in the Bay/Delta and its tributaries and in Clear Lake and Lake Berryessa because it accumulates in aquatic organisms to levels that pose a threat to predator species and people that eat fish. Elevated mercury levels can be expected in areas where mercury was mined (Coast Range), where mercury was used to extract gold (Sierra Nevada and Cascade Range), and in downstream water bodies. Because of elevated mercury levels in fish tissue, numerous water bodies, including the Delta, have been included on the Clean Water Act Section 303(d) list of impaired water bodies. For water bodies on this list, the Clean Water Act requires the development of a pollution control plan called a "Total Maximum Daily Load" or TMDL for each water body and associated pollutant on the 303(d) list. The TMDL is the quantity or load of a pollutant that can be safely assimilated by a water body without violating water quality standards. The load, including a safety factor, is allocated among various point and nonpoint sources of pollution. The load



allocations are then incorporated into the Basin Plan along with a plan to implement the allocations and description of a monitoring program to verify the load reductions and subsequent compliance with water quality standards. In order to complete a TMDL, information is required about the levels of pollutants that are appropriate for receiving waters, the sources of the pollutants, the load reductions that are needed, and mechanisms for achieving the needed reductions.

The Clean Water Act Section 303(d) list adopted by the Regional Board in 1998 identified mercury TMDL work as a high priority in the Delta and tributaries. US EPA agreed with this designation.

Priority: High

Current Action: Mercury cycling in the aquatic environment and the accumulation process in aquatic organisms is not well understood. Therefore, setting a reasonable goal in aquatic organisms and determining which sources are most important to control is not an easy task. A significant amount of study and research needs to be completed up front in order to have much of a chance of success.

As part of the Bay Protection and Toxic Cleanup Program, the Regional Board is in the process of developing a cleanup plan to address the mercury problem in the Delta. The draft plan describes a staged strategy that will focus first on development of a TMDL (load reduction program) in Cache Creek (a significant source of mercury to the Delta). At the same time, studies will be initiated in the Delta to answer important questions about mercury cycling and monitoring upstream in the watershed to identify sources. The draft plan is being developed by a team that includes some of the foremost experts on mercury in the country. It also includes local stakeholder support and input. The second stage of the plan calls for detailed studies at upstream sites and finally development of a TMDL for the Delta. The Sacramento River Watershed Program and the Cache Creek Work Group are important elements in assuring that this program moves forth.

Current Resources: It is anticipated that this work will take about 2 yrs for several years. A significant amount of resources will need to be devoted to collecting information on mercury cycling at different locations, determining the sources of mercury in the watershed, determining what abatement actions are appropriate, and determining appropriate levels to protect aquatic organisms and public health. Budget projections, including assumptions about budget augmentations from CALFED and others, indicate that most of the resources will probably be available for this work, with the possible exception of resources needed for the Basin Planning component and some of the loading studies.

Additional Action: Preparing the TMDL for adoption into Basin Plan and oversee implementation.

Additional Resource Requirements: 1.0 pys needed to prepare the Basin Plan amendment, review alternatives for implementation, comply with CEQA and to adopt TMDL into the Basin Plan.

**Issue: Dissolved Oxygen Problems in San Joaquin River near Stockton**

Discussion: Low dissolved oxygen concentrations in the San Joaquin River in the vicinity of Stockton annually impact or threaten to impact beneficial uses. Problems are most acute at high temperature in the San Joaquin River in late summer and early fall. Basin Plan water quality objectives are frequently violated during this period. Adult San Joaquin River fall run Chinook salmon migrate up river between September and December to spawn in the Merced, Tuolumne, and Stanislaus Rivers. The San Joaquin River population has experienced severe declines and is considered a species of concern by the US Fish and Wildlife Service. Low dissolved oxygen in the San Joaquin River can act as a barrier to migration. Low dissolved oxygen levels can kill or stress salmon and other species present in this portion of the Delta. A computer model developed for Stockton Wastewater Treatment Plant identified ammonia and BOD as the primary cause of the low dissolved oxygen concentrations. The sources are discharges from the treatment plant, and surrounding and upstream point and nonpoint sources. River flow and water temperature, upstream algal blooms and sediment oxygen demand were identified as key factors influencing dissolved oxygen levels. The City of Stockton supported the need for a comprehensive TMDL to address this problem. Staff agrees with this comment.

Priority: High

Current Action: A Bay Protection and Toxic Cleanup Plan is under development that will, if implemented, satisfy the requirements of a TMDL. The effort would involve working with stakeholders to develop a program to identify and collect the information needed for the Regional Board to adopt the TMDL and to establish an implementation program.

Current Resources: It is estimated that about \$650,000 is required for the load studies and about 0.5 pys would be required, annually, for three years. Assuming funding is obtained and the studies are completed, it is anticipated that a proposed TMDL would be before the Regional Board within three years. There are no resources to cover the staff costs. It is anticipated

that CALFED and cooperating stakeholders will provide resources for the studies.

**Additional Action:** Prepare a Basin Plan amendment, review alternatives for implementation, comply with CEQA and to adopt TMDL into the Basin Plan and oversee implementation.

**Additional Resource Requirements:** 0.5 py in basin planning resources needed for 3 years and 0.5 py annually, for several years thereafter for implementation.

**Issue: Regulatory Policies for Selenium in the San Joaquin River**

**Discussion:** A number of commenters recommended that TMDL activities related to selenium in the San Joaquin River watershed should be given high priority. Commenters wanted to be assured that contributions from all sources be considered. Commenters have stated that the Panoche/Silver Creek Watershed is a primary source of selenium entering the Grasslands and/or Delta Mendota Pool. US EPA recommends that a study be completed to quantify the amount of selenium that comes from the upper watershed and to develop a program to control the runoff. The City of Mendota suggests that a water storage facility located approximately 1 mile west of I-5 would control contaminants flowing from the watershed. Broadview Water District recommends that farmers and districts should not be held responsible for selenium loads that are generated from sources beyond their control. Summers Engineering, Inc. points out that despite efforts to improve irrigation efficiency and manage drainage, the Grassland Area Farmers have not been able to achieve the load reductions set out in waste discharge requirements as a “default” system of regulation if the Grassland Bypass Project is not continued with new waste discharge requirements after the current 5-year term. Therefore the dischargers may need to request an extension of the compliance period or alternative criteria.

A 50-mile portion of the San Joaquin River along with tributaries draining the Grassland basin (Mud Slough (north) and Salt Slough) have been listed in the Section 303(d) list as impaired by selenium. Selenium control actions were updated in an amendment to the Basin Plan in May 1996. Much of the selenium control provisions adopted into the Basin Plan were based on a Consensus Letter submitted to the Regional Board by the parties to the Grassland Bypass Channel Project which included the San Luis Delta Mendota Water Authority (SLDMWA), US EPA, US Fish and Wildlife Service and the US Bureau of Reclamation. The SLDMWA, through a joint power

agreement, represents the water districts of the Grassland watershed, including Broadview Water District. Included within the Consensus Letter recommendations were monthly and annual regional selenium load limits for discharges to the San Joaquin River to be regulated by Waste Discharge Requirements (WDR) as effluent limits to be issued to the SLDMWA. Also, included was a schedule for selenium load reductions for the life of the project (five years). The Regional Board adopted a maximum annual regional selenium load limit for discharges to the San Joaquin River and issued WDRs for Grassland Bypass channel Project to the US Bureau of Reclamation and the SLDMWA. These two agencies are accountable to the Regional Board for violation of WDR provisions.

Selenium load limits that were negotiated into the Use Agreement for the Grassland Bypass Channel Project were based on a 10-year record of discharges to the San Joaquin River. This record included all contributions of selenium including storm generated, Panoche Creek flooding, upslope drainage and loads generated by Grassland Area Farmers (GAF). The analysis did not distinguish from the various sources. Additionally, within the Use Agreement, provisions were made for violations of monthly and annual load limits due to “unforeseeable and uncontrollable events”. While there are no such provisions in the Basin Plan, it is a factor that the Regional Board could consider in the event of violation of WDR effluent limits.

An economic incentive program is being developed by the GAF as one of the possible means for achieving selenium load reductions. Selenium load targets have been apportioned to the various water districts by the Steering Committee of the GAF and it is assumed that these are the load targets that the District contends it cannot achieve. Selenium load targets for individual water districts were allocated by the Steering Committee of the GAF and, as such, districts that exceed their targets are accountable to the Steering Committee for the GAF and not the Regional Board.

The loads from the upper watershed will be addressed as part of the ongoing Panoche Creek CRMP effort. Consideration of a storage facility could be considered as one part of an overall solution to the water quality problems in the area.

Priority:

High

Current Action:

There are no Basin Planning activities in the next fiscal year as all efforts are focused on implementation and evaluation of implementation measures.

**Additional Action:** There are two other future activities that are associated with Basin Planning. The first is the commitment of the US EPA and other parties to the consensus letter on the drainage management to review the adequacy of the existing water quality objectives for selenium in the San Joaquin River. This review may lead to proposals to modify the Basin Plan. Second is that the Board is committed to reviewing the adequacy of the 1996 Basin Plan amendment prior to the year 2001.

**Additional Resource Requirements:** The majority of the augmented action would be covered by existing Ag drainage resources but 0.4 personnel years of basin planning resources will be required for 3 years to complete the Basin Plan amendment review and prepare documents for Board consideration. In addition, 0.4 personnel years for one year would be required to review and prepare the needed documentation for a change in a water quality objectives.

**Issue: Policies for Maintaining Water Quality for Drinking Water**

**Discussion:** The Sacramento/San Joaquin River Delta is the source of drinking water for two thirds of the state's population (over 20 million people). The two principal rivers discharging to the Delta, the Sacramento and San Joaquin Rivers, receive pollutant loading from the various land uses in the Central Valley including, agriculture, mining, confined animal production, and urban. These pollutants include pesticides, trace elements, metals, nutrients, and pathogens. The Delta and segments of the Sacramento and the San Joaquin Rivers are listed in the Clean Water Act Section 303(d) list due to impairment of beneficial uses by many of these pollutants. Due to increased intensity of development, each of these sources will increase posing a greater threat to drinking water supplies.

State Water Board Resolution No. 88-63 (Sources of Drinking Water Policy), which is incorporated into the Basin Plan, recognizes municipal or domestic water supply beneficial uses to all surface waters, with a few limited exceptions. Water quality objectives to protect drinking water supplies are mostly contained in Title 22 of the California Water Code. It includes Maximum Contaminant Levels (MCLs) for parameters such as arsenic, lead, cadmium, silver, selenium, and organochlorine pesticides. The Regional Board is involved in programs to address salinity problems in the San Joaquin River watershed. Other drinking water concerns, such as pathogens and disinfection by-products have not been addressed. In response to directives in the 1996 Reauthorization of the federal Safe Drinking Water Act, the US EPA has been developing more stringent regulations with respect to controlling and reducing levels of

disinfection by-products and pathogens and the removal of pathogens in drinking water. These regulations are of concern to water purveyors whose source of water is from the Delta because of the relatively high levels of precursors of harmful disinfection by-products and pathogens in Delta waters and because of the high cost of treatment to comply with the regulations. These new regulations raise issues of concern for constituents, which have not been traditionally regulated by the Regional Board.

One of the regulations promulgated by the US EPA is the Disinfection By-product (D/DBP) Rule which is intended to reduce the levels of DBPs by lowering MCL for trihalomethanes (THM) and establishing MCLs for haloacetic acids (HAA) and bromate. The progressive lowering of the MCLs for these constituents will be done in two stages. The first stage was promulgated in November 1998. THMs, HAA, and bromate are formed when humic substances and bromide (precursors) in the source water react with the disinfectant (chlorine or ozone). These DBPs have been implicated with bladder cancer and miscarriages. In addition to these DBPs, there are a host of other DBPs produced from the disinfection process that could potentially be added to the list of regulated constituents in stage 2 of the rule. Another feature of the rule is the regulation of total organic carbon (TOC). The rule requires the removal of organic material in the source water through advanced treatment (e.g., enhanced coagulation or precipitation). Reducing the amount of TOC will reduce the amount of DBPs formation, enhance the effectiveness of the disinfectant to inactivate pathogens and reduce the costs of water treatment. To be used directly as a source water, Delta waters will be required to reduce TOC by 25 to 35 percent.

The higher the level of precursors, the higher the yield of DBPs produced upon disinfection. Delta waters are unusually high in dissolved organic matter from agricultural drainage discharges originating from organic soils of the Delta and introduced from the Sacramento and San Joaquin Rivers. DBP formation potential in Delta waters is further exacerbated by the presence of elevated levels of bromide. Bromide in agricultural drainage from the San Joaquin River basin along with sea water intrusion enhances the formation of THMs and also greatly increases the mass yield of THMs as the molecular weight of bromide is more than double that for chloride. The MCLs for THMs and HAA are based on a mass sum of the total regulated constituents. Median Delta water bromide concentrations are more than 6 times the national median. The THM formation potential of Delta water is more than double the national median. These two factors make it difficult and expensive for Delta water purveyors to meet the anticipated regulations.

Another conflicting rule being promulgated by the US EPA is the Interim Enhanced Surface Water Treatment (IESWT) Rule. The major feature of this rule is stricter turbidity limits. The longer-term implementation of this rule will probably require *Cryptosporidium* and *Giardia* removal and inactivation standards. The D/DBP and Long-term Enhanced Surface Treatment rules are in conflict because greater use of chlorine and ozone disinfectants will be required to meet the microbe inactivation provisions, which in turn generate higher levels of DBPs. High concentrations of precursors not only are problematic from the standpoint of DBP generation in excess of regulatory limits but also because precursors consume disinfectant, thus requiring greater quantities of disinfectant to achieve effective disinfection. Precursors also interfere with the treatment selection options. For example, use of the more effective disinfectant ozone for *Cryptosporidium* inactivation or to avoid THM and HAA generation, in the presence of bromide, will generate bromate, which is a regulated DBP.

A report of the California Urban Water Agencies (CUWA) concluded that TOC levels in the Delta would have to be reduced to less than 3 mg/l and bromide to less than 50 ug/l in order to provide flexibility in the use of enhanced coagulation and ozone disinfection to meet the long-term regulatory scenario. Present concentrations of TOC at the Harvey Banks pumping plant range between 2.6 and 10.5 mg/l and median bromide concentrations at 290 ug/l. Without reduction of precursors to these levels, more expensive advanced treatment technologies such as granular activated carbon or membranes would have to be used. The cost of treatment and disposal of residues would make these options prohibitive. CUWA estimates that complying with the TOC removal provisions (enhanced coagulation of stage 1 of the D/DBP Rule alone would cost an additional \$16 to \$34 per acre-foot. Without reducing the precursors to the recommended levels, the cost of membrane treatment was estimated between \$140 and \$650 per acre-foot to comply with the likely long-term regulatory scenario.

In addition to pathogens and DIP precursors, concerns have also been expressed with salinity. Salinity impacts the palatability of drinking water and impacts the re-use of the water. Reclaimed water has higher salinity levels than the source water. Increasing the salinity of the source water may increase the salinity level of reclaimed water to a level which may no longer be suitable for re-use such as landscape irrigation or groundwater recharge.

The promulgation of drinking water regulations raises concerns regarding water constituents not previously regulated. CUWA and the Department of Water Resources recommended that the Regional Board develop a drinking water policy that includes water quality objectives

and implementation plans for TOC, total dissolved solids, and pathogens. Some specific recommendations were made regarding what should be in the policy.

Priority: Medium

Current Action: None

Current Resources: None

Additional Action: The most logical approach would be to have Regional Board staff work with CUWA, Department of Water Resources and CALFED to prepare a workplan for development of the policy and begin to collect information that will be required for policy development. Following development of a workplan, the actual policy would need to be developed and adopted into the basin plan.

Additional Resource Requirements: 1 py annually for two or more years to adopt the policy into the Basin Plan. An additional \$30,000 is needed for technical support.

**Issue: Policy for On-Site Disposal Systems**

Discussion: There are approximately 500,000 single family residential septic systems in the Central Valley Region that discharge 150 million gallons of sewage per day. Failed septic systems impact groundwater with nutrients and pathogens. In order to perform adequately, on-site systems must be properly designed, located, installed and maintained. The Board believes that control of individual waste treatment and disposal systems can best be accomplished by local county environmental health departments if these departments strictly enforce an ordinance that is designed to provide complete protection to ground and surface waters and to public health. More than 25 years ago the Regional Board established guidelines for siting and operation of individual disposal systems in the Basin Plan. These guidelines were designed to protect water quality and are intended for implementation through ordinances of county government.

In recent years, there has been a proliferation of residential and urban development in the Sierra Nevada foothills that utilize individual disposal systems. Some of these developments may be sited on areas inadequate for septic systems due to steep slope, shallow soils and fractured rock geology. Additionally, County ordinances may not be taking into account the cumulative impact of high density installation of individual disposal systems. The Regional Board guidelines need to



be updated. Additionally, there is a need to review ordinances established by counties within our regional boundary for consistency with the guidelines and to assess the effectiveness of implementation by the Counties. There are 38 Counties in the Region.

Priority: Medium

Current Action: None for lack of resources

Current Resources: None

Additional Action: 1) work with County Health Departments and other stakeholders to review and recommend revisions to the existing guidelines;  
2) evaluate the effectiveness of county ordinances and implementation programs are consistent with the suggested guidelines;  
3) revise the Basin Plan to include the recommended revisions; and  
4) establish an enforcement to assure compliance with Regional Board guidelines

Additional Resource Requirements: 2-3 pys per year for three years.

**Issue: Temperature Objectives to Protect Spring Run Salmon and Steelhead**

Discussion: For most water bodies in the Region that have aquatic habitat beneficial uses, the general temperature objective is that *“at no time or place should waters be increased more than 5 degrees Fahrenheit above natural receiving water temperature.”* The Department of Fish and Game commented that this objective is not adequate in certain key streams critical to spring run salmon and steelhead. The Department provided a list of streams where protection is not adequate.

The Department specified that mortality to developing eggs and embryos begins when daily average water temperatures exceed 56 degrees Fahrenheit and reaches 100 percent at 62 degrees Fahrenheit. The Department is concerned that a water temperature increase of 5 degrees Fahrenheit in these cold water streams could result in water temperatures exceeding the maximum safe level for the survival and development of embryonic and juvenile life stages of salmon and steelhead. Furthermore, water temperatures exceeding 60 degrees Fahrenheit are deleterious to adult spring-run salmon. The effects of temperature on the growth and survival of salmonid eggs, alevins, and fry have been well documented. The effects of temperature on adult spring-run salmon are less clear; however, adult spring-run salmon

hold in freshwater over the summer months before spawning in early fall, where they are particularly vulnerable to high summer water temperatures.

The spring-run Chinook salmon has been listed as Threatened under the California Endangered Species Act. Efforts are currently underway by state and federal agencies and stakeholder groups to protect and possibly enhance these populations. Establishing maximum temperature limits in these streams would help assure their viability and support the (COLD), (SPWN), and (RARE) beneficial uses of streams.

Priority: Medium

Current Action: None

Current Resources: None

Additional Action: Amend the Basin Plan by establish maximum temperature limits in streams and/or stream segments that the Department has identified as needing protection for sustaining anadromous salmonid populations. Consider deleting the 5 degree increase ceiling where numerical limits are established and consider the economic consequences to point and nonpoint source dischargers, especially agriculture.

Additional Resource Requirements: 1 py for one year + \$200,000 for an economics review contract.

**Issue: Regulatory Actions in Agricultural Dominated Water Bodies and Agricultural Conveyance Facilities**

Discussion: In agricultural environments, a complex network of modified natural and constructed channels convey irrigation supplies to farms and export agricultural drainage water to natural streams. Many of the constructed and artificial channels lack habitat and physical flow characteristics of natural channels required to sustain the full range of aquatic life and other beneficial uses. Additionally, in natural channels whose flow is dominated by agricultural drainage, water quality may be less than ideal to protect aquatic life and other beneficial uses. The principal concern of commenters was that, although the water bodies that receive agricultural drainage do not achieve full beneficial use, water quality restrictions may reduce flow to where the total level of beneficial use attained is less than without restrictions. Toxic conditions can also exist because of elevated levels of pesticides and other contaminants. In the Sacramento and San Joaquin River Basins,

it is estimated that more than 130 natural water bodies, totaling more than 1100 miles, are dominated by agricultural drainage and supply water. There are more than 4100 water bodies, totaling over 9300 miles, which are constructed facilities designed to carry agricultural drainage and supply water. There are more than 75 water bodies, totaling almost 600 miles, that are natural dry washes that have been altered to carry agricultural supply or drainage water.

Commenters have recommended that the Regional Board consider defining the beneficial uses that are appropriate for these water bodies and the levels of protection (i.e., what water quality objectives should apply) that are needed to protect these beneficial uses. The numerous comments that highlighted the need for the Regional Board to define a point of application policy for compliance with water quality objectives is part of this same issue. The California Rice Industry Association and Valent USA Corp. recommended specific language to categorize different types of agricultural dominated water bodies and to determine which water quality objectives should apply to each category. Valent USA also suggested that this entire issue should be addressed by the State Water Board.

Table II-I of the Basin Plan lists surface water bodies and beneficial uses that are designated for those water bodies. The beneficial uses of any specifically identified water body generally apply to tributary streams. In cases where this is not appropriate, the Basin Plan indicates that beneficial uses will be evaluated on a case by case basis. These site-specific evaluations can only be made through the Basin Plan revision process. They would need to include all the considerations that are specified in Porter-Cologne and be consistent with requirements of the Clean Water Act. In the absence of the site specific studies, beneficial uses are assumed to be the same as for the downstream tributary that is listed in the Basin Plan and water quality objectives that are applicable are the same as for the mainstream rivers.

Priority:	Medium
Current Action:	None
Current Resources:	None
Additional Action:	Develop a policy to address this issue.
Additional Resource Requirements:	At least 1.5 pys for 4 to 5 years.

**Issue:****Need for Groundwater Survey and Control Policies for Discharges to Groundwater****Discussion:**

Numerous commenters have recommended revisions to the Basin Plan that would address cleanup and prevention of groundwater quality problems. The Basin Plan describes various groundwater quality problems that exist throughout the region. Studies have been conducted by various agencies to characterize many of them. The Basin Plan includes numerous policies that address prevention and cleanup of groundwater quality problems. Nevertheless, large portions of some aquifers are being degraded by elevated levels of salt, nitrates, pesticides and other nonpoint source contaminants. In addition, there are thousands of individual sites that are impacting localized portions of groundwater aquifers. There are programs in place that are designed to address the localized problems (i.e., underground tank and site cleanup program) but there has been no organized effort to address the wide spread problems of nitrates and salts. Existing programs have not been effective in protecting groundwater resources. A major effort is needed to assess the current conditions, to determine the factors contributing to present groundwater impacts, and to develop policies that can be used to correct existing problems and prevent future problems.

Nitrates in groundwater in San Joaquin River and Sacramento River Basins. A 1988 State Water Resources Control Board report to the State Legislature on Nitrate in Drinking Water (SWRCB, 1988) reported that 10 percent of the samples in the Storet database were above the primary Maximum Contaminant Level (10 mg/L nitrate-nitrogen). A geographical depiction of wells with elevated levels of nitrate (greater than 4.5 mg/L nitrate-nitrogen) showed the highest densities are in the Central Valley close to the Highway 99 corridor and primarily around populations centers (e.g. Modesto, Yuba City, Fresno, and Bakersfield) and concentrated animal confinement areas. Since 1980, over 200 municipal water supply wells have been closed in the Central Valley due to exceedance of the nitrate Maximum Contaminant Level (RWQCB, 1996).

The actual nitrate groundwater contamination situation may be much greater than realized by the SWRCB geographical depiction and statistics of closed wells. The groundwater nitrate database is biased with respect to large water systems as these systems receive more scrutiny than small water systems. Domestic wells with less than 15 connections are not subject to state oversight and those with less than 5 connections are not subject to any monitoring requirements. It is these small systems which are most vulnerable to contamination by nitrate. These wells are generally placed in shallow aquifers due to

limited resources and yield requirements of small and private systems. Large water supply systems, on the other hand, with greater economic resources, generally tap deeper aquifers where there is more reliable water supply and quality. Additionally, small systems are more likely located in rural areas, generally agricultural. Recent monitoring by the US Geological Survey of 60 household wells located in one agricultural area found 30 percent of the wells exceeded the drinking water standard.

Agricultural activities including crop and confined animal production and golf courses, parks and commercial nurseries are a major sources of nitrate in groundwater. In addition, in rural areas septic systems contribute significantly to nitrate contamination of groundwater. The picture of nitrate status and distribution in shallow groundwater is incomplete and is probably more extensive than realized by the limited database. Additionally, as nitrate moves into the deeper aquifers, more water systems will become affected.

The primary health concerns with the consumption of water with elevated nitrate is the condition known as methemoglobinemia. Methemoglobinemia or more commonly known as the blue baby syndrome is the interference by nitrate to the absorption of oxygen by hemoglobin. Infants, younger than 6 months, are most susceptible and the oxygen deficit in the blood stream produces blue coloration of the lips and skin and hence the term blue baby. More severe cases result in death. The health impacts to infants subject to chronic oxygen deprivation, as a result of nitrate consumption in drinking water, which do not result in mortality are unknown. The condition is often misdiagnosed and is believed to be under reported. A survey of hospital discharge records by Department of Health Services (DHS) between 1983 and 1995 revealed 97 cases of methemoglobinemia in children younger than one year. The database, however, was incomplete and it could not be determined how many cases were attributable to consumption of nitrate contaminated groundwater. There are other factors that can lead to this condition such as aerosol deodorizers and certain pharmaceuticals.

According to the 1988 State Board report to the legislature, \$48.7 million were requested from DHS in 1986 for bond funds for remedial measures of groundwater impacted by nitrate. The Central Valley accounted for 60 percent of the applications for bond money for small water systems and 35 percent for large water systems. Stanislaus County alone accounted for 21 percent of all of the applications statewide. Water systems impacted with nitrate exceeding the Maximum Contaminant Level must be blended with uncontaminated water, treated by ion exchange, or closed. The report to the legislature stated that the US EPA estimated the annual increase in household

water bill to treat contaminated water at between \$77 to \$340 for water systems of 100 to 1,000,000 people served.

As noted, the primary sources of nitrate in groundwater are application of nitrogen fertilizers, disposal or reuse of animal waste at confined animal production facilities, and individual sewer systems (septic systems). Areas of intensive crop production or farming areas of highly permeable soils, especially crops with a high nitrogen demand (e.g., vegetables, citrus, and corn silage), are known to be or are suspected of causing nitrate at elevated levels in the groundwater (e.g., Salinas Valley, Chico Basin and Hilmar Area of Merced County). Groundwater in crop production areas can become contaminated with nitrate when nitrogen fertilizers are applied at rates in excess of crop utilization and inefficient irrigation or high rainfall leach the nitrate to groundwater. Other factors that put groundwater at risk are a shallow aquifer, the absence of a restricting layer to vertical migration of nitrate, permeable soils and poor well construction.

In 1993, the Regional Board conducted a survey of groundwater below five typical well operated dairies in the vicinity of Hilmar. The average nitrate concentration below these dairies was 49 mg/L and with maximum value of 250 mg/L detected. This far exceeds the drinking water standard of 10 mg/L. Conditions were conducive to migration of nitrates to groundwater as soils are permeable (sandy) and the water table is shallow (4 to 25 below ground surface). There are 1600 dairies in the Central Valley with approximately 1 million milking cows. At present the Board is requiring groundwater monitoring at approximately 20 dairies. However, there are no sites undergoing remediation.

The Basin Plan recognizes the contamination of groundwater by nitrate as a critical issue and recommends that the State Water Board take the lead in developing programs for the protection of groundwater from nitrate contamination. In 1995 the State Water Board assembled committees of technical advisors to review the Non Point Source Management Plan and to advise the State Water Board with respect to compliance with the federal Coastal Zone Management Act and its reauthorization (CZARA). Several committees dealt, in one form or another, with the issue of nitrate in groundwater. However, no new initiatives resulted from this process. With respect to septic systems, the Regional Board has dealt with these on a case-by-case basis by prohibiting discharge from a service area that has become problematic. Twenty-six prohibitions have been instituted by the Regional Board. The Basin Plan contains guidelines for use of septic tank systems in developments. Staff has encouraged counties to adopt and enforce ordinances that are consistent with the guidelines. With respect to groundwater impacted by nitrate used in crop production, no programs

are in place and no enforcement cases have been brought before the Board.

Salt in groundwater of the San Joaquin River Basin. Approximately 600,000 tons of salt are imported annually to the western portion of the San Joaquin Basin (west of the San Joaquin River) for crop irrigation and wetland management via federal, state, and local water projects. An additional 160,000 tons are applied through irrigation from San Joaquin River diversions. Some of this salt is returned to the river through tail water return flows and some is stored in the soil. Most, however, is leached below the root zone in order to maintain salt balance in the root zone. Much of this leached salt ends up in the groundwater.

Salt from all sources will reach groundwater. Controlling the rate of input to the groundwater will be the key to maintaining the groundwater beneficial use for the longest period possible. Degradation of groundwater in the San Joaquin River Basin by salts is unavoidable without a plan for removing salts from the basin. The Board's present policy supports a drain to carry salts out of the valley as the best technical solution to this water quality problem. The drain could carry wastewater generated by municipal, industrial, and agricultural activities, high in salt and unfit for reuse. The only other solution is to manage the rate of degradation by minimizing the salt loads to the groundwater body.

Some of the salt load to the groundwater resource is primarily the result of natural processes within the Basin. This includes salt loads from the valley floor runoff, native surface waters, and leached from the soils by precipitation.

Salts that are not indigenous to the Basin water resources result from man's activity. Salts come from imported water, salt leached by irrigation, animal wastes, fertilizers and other soil amendments, municipal use, and industrial wastewater. The relative contribution of the various sources has not been recently determined. These salt sources, all contributors to salinity increases, need to be managed to the extent practicable to reduce the rate of groundwater degradation.

No proven means exist at present that will allow ongoing human activity in the Basin and maintain groundwater salinity at current levels throughout the Basin. To maintain long term beneficial use however, the Board needs to develop strategies and implementation programs that allow all groundwaters to be maintained as close to natural concentrations of dissolved matter as is reasonable considering careful use and management of water resources.

Salts, as measured by Total Dissolved Solids (TDS) are of concern because they interfere with agricultural and domestic beneficial uses of groundwater. Groundwater with less than 450 mg/L TDS (EC of 700 mhos/cm) are acceptable for all agricultural uses. At levels exceeding this value, reduction in crop yields and/or germination failure may result depending on the tolerance of the crop. The drinking water limits are specified as a Maximum Contaminant Level in Title 22 of the California Code of Regulations. A range of secondary Maximum Contaminant Levels, which are based on aesthetics (taste, odor, appearance) have been established for TDS; 500 mg/L is the recommended; 1,000 mg/L is the maximum if no other source is reasonably available; and 1,500 is the short-term which is acceptable on a temporary basis. The Basin Plan incorporates the Maximum Contaminant Levels by reference for the protection of municipal supply of groundwater. No water quality objectives are specified in the Basin Plan for the protection of agricultural beneficial uses.

The extent of groundwater impacted by elevated levels of salt are unknown, as groundwater quality data from shallow aquifers is scant. However, a portion of the western San Joaquin River Basin is known to have shallow groundwater and soils with high levels of soluble salts. Between 1977 and 1987 the acreage of farm land affected by shallow groundwater (5 feet or less) increased by 53 percent to 817,000 acres (SJVDP, 1990). Most of this water is too saline to be used for domestic, industrial, or agricultural purposes. Deeper aquifers, which are used for drinking, may be impacted in the future through transport of salts across leaky aquifers or through improperly abandoned wells or older wells that were not designed to prevent hydraulic connection with deeper aquifers.

Staff of the Regional Board is presently developing a control plan for salinity in the San Joaquin River. The control program, however, will only deal with control of loads discharged to the San Joaquin River. Since groundwater inflow is a contributor of salt to the river and that at least the municipal water supply beneficial uses of groundwater are being impacted, a parallel control plan needs to be established for the control of salts to groundwater. Additionally, as urbanization of the Central Valley continues, groundwater resources may become an important source of groundwater and steps to restore, maintain, and protect the quality of this supply need to be established.

Priority:	Medium
Current Action:	None due to lack of resources
Current Resources:	None



Additional Action: In absence of a uniform statewide program for dealing with nitrates and salt in groundwater, the Regional Board should develop a program to address these issues.

Additional Resource Requirements: 2 pys and \$100,000 annually over several years.

**Issue: Ammonia Objectives**

Discussion: The Basin Plan does not contain a numerical ammonia limit. In determining permit limits, staff relies on application of the narrative objective. Limits are placed in permits that take into account ammonia toxicity information, receiving water characteristics, available dilution and other considerations. Numerous parties have requested that numerical objectives be established in the Basin Plan and have made recommendations about including averaging periods and suggested specific numerical objective language. Commenters supported information contained in the 1991 US EPA Technical Support Document that discussed permit derivation procedures. The narrative toxicity objective indicates that the Regional Board can use available information to assist in determining compliance with the objective. Therefore, the information that is contained in the US EPA Technical Support Document can be used by staff to derive permit limits. Staff agrees that numerical objectives need to be developed.

Priority: Medium

Current Action: None

Current Resources: Develop water quality objectives for ammonia.

Additional Action: About 0.5 py, annually, for two years to work with the Department of Fish and Game and other interested parties to develop objectives and an implementation plan and present them for Regional Board consideration for adoption.

Additional Resource Requirements: Unknown

**Issue: Chlorine Objectives**

Discussion: The Basin Plan does not contain a numerical chlorine limit. In determining permit limits, staff relies on application of the narrative

objective. Limits are placed in permits that take into account chlorine toxicity information, receiving water characteristics, available dilution and other considerations. The Department of Fish and Game recommended specific chlorine permit limits that should be included in the Basin Plan. The City of Stockton and U.C. Davis have recommended that effluent limits include averaging periods. Adoption of a chlorine objective and residual chlorine limits for permits is needed.

Priority: Medium

Current Action: None for lack of resources

Current Resources: None

Additional Action: Develop water quality objectives for chlorine.

Additional Resource Requirements: About 0.5 py, annually, for two years to work with the Department and other interested parties to develop objectives and an implementation plan and present them for Regional Board consideration for adoption.

**Issue: Basin Plan Amendment for Designation of Groundwater**

Discussion: The Basin Plan should be amended to state that all groundwaters, except those meeting one of the specific exception criteria listed in the Basin Plan, based on SWRCB Resolution No. 88-63, are designated as MUN, AGR, IND, and PRO. Thus, a groundwater aquifer meeting one of the exception criteria would not be designated for that beneficial use in the first instance.

The current basin plan states that ‘Unless otherwise designated by the Regional Board, all groundwaters are considered suitable, or potentially suitable, for municipal or domestic supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO). In making any exceptions to the beneficial use designations of municipal and domestic supply (MUN), the Regional Board will apply the criteria in State Water Board Resolution No. 88-63, ‘Sources of Drinking Water Policy’.’ Similar exception criteria are also to be considered in making exceptions to AGR, IND, and PRO. In other words, the basin plan make a blanket designation and requires affirmative action by the Regional Board to make exceptions through Basin Plan amendment.

The Sources of Drinking Water Policy has been interpreted to require a full Basin Plan Amendment to dedesignate beneficial uses. The Regional Board does not have sufficient Basin Planning resources to amend the Basin Plan for each action requiring dedesignation. Furthermore, amending the Basin Plan is a long and expensive process that does not lend itself to timely decision-making needed in site clean-up and facility permitting.

To address the above problem, the Basin Plan should be amended to state that all groundwaters, except those meeting one of the specific exception criteria listed in the Basin Plan, are designated as MUN, AGR, IND, and PRO. Thus, a groundwater aquifer meeting one of the exception criteria would not be designated for one or more of these beneficial uses in the first place. Whether, in a given case, an aquifer met any of the criteria would be a factual question, which the Regional Board could decide on a case-by case basis in a public meeting. At a minimum, however, the Regional Board would update its Basin Plan during each triennial review to list those groundwater basins or portions thereof which the Regional Board had previously determined met the exception criteria and, therefore, do not support MUN, AGR, IND, and/or PRO.

Priority: Medium

Current Action: None for lack of funds

Current Resources: None at this time

Additional Action: Prepare background information, conduct CEQA and propose a revision to the Basin Plan.

Additional Resource Requirements: 0.2 pys for one year

**Issue: Revisions to Beneficial Uses for Surface Waters Listed on Table II-I**

Discussion: Table II-I in the Basin Plan contains a list of water bodies with specific beneficial uses identified for each of them. The Department of Fish and Game suggests that several of the designations are incorrect and suggests revising the beneficial uses for a long list of surface water bodies. In addition, the Department suggested that a new beneficial use designation should be defined to protect beneficial uses of riparian wetlands and other wetlands that serve to buffer the passage of surface drainage to receiving water. In addition, the Department

recommended that water quality objectives in the existing Basin Plan be applied to wetlands. Detailed studies would need to be conducted to determine water quality objectives that were appropriate for wetlands.

Priority: Low

Current Action: None due to lack of resources.

Current Resources: None

Additional Action: The Department should submit information that supports the proposed changes to the beneficial uses. Proposal, especially those deleting uses, must meet federal Clean Water Act requirements as detailed in a use attainability analysis and meet the requirements of CEQA. Consideration of identification of a new use designation for wetlands and applying existing water quality objectives to wetlands would also require submittal of additional supporting information. This would be a significant addition, especially the CEQA and Office of Administrative Law requirements.

Additional Resource Requirements: At least one 1.0 py for several years to address controversial additions or any deletions. Additional resources would need to be obtained to address the wetlands issue. 0.2 pys over a one-year period could address noncontroversial issues.

**Issue: Groundwater Beneficial Use Designations in Rancho Cordova**

Discussion: The Basin Plan identifies all groundwaters in the Region as suitable or potentially suitable, at a minimum, for municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply. Water quality objectives are included to specifically protect municipal and domestic supplies. In addition, there are objectives for taste and odor and for toxicity. The toxicity objective provides protection for situations where the groundwater is used for agriculture or where groundwater is pumped and released to surface water. To determine compliance with the narrative toxicity objective, the Regional Board considers all relevant information including US EPA numerical criteria. The Department of Health Services does not believe the existing objectives and beneficial use designations are adequate to protect groundwater. Their comment is primarily directed toward groundwater quality in the vicinity of Aerojet in Rancho Cordova. Staff does not believe that new designations are needed to protect groundwater.

Priority: Low

Current Action: None. Staff does not recommend that steps be taken to develop new designations that would be added to protect groundwater.

**Issue: Application of Tributary Rule**

Discussion: Table II-I of the Basin Plan lists surface water bodies and beneficial uses that are designated for those water bodies. The beneficial uses of any specifically identified water body generally apply to tributary streams. In cases where this is not appropriate, the Basin Plan indicates that beneficial uses will be evaluated on a case by case basis. El Dorado Irrigation District recommends that the Basin Plan should be amended to allow beneficial uses to be identified during the waste discharge requirement adoption process. Legal counsel has indicated that this evaluation must take place through the basin planning process. It cannot be done in the waste discharge requirement process.

Priority: Low

Current Action: The Regional Board has no legal flexibility in this matter.

**Issue: Beneficial Use Designations for Surface Water Bodies Not Listed in Table II-I**

Discussion: Table II-I of the Basin Plan lists surface water bodies and beneficial uses that are designated for those water bodies. The beneficial uses of any specifically identified water body generally apply to tributary streams. In cases where this is not appropriate, the Basin Plan indicates that beneficial uses will be evaluated on a case by case basis. These site-specific evaluations can only be made through the Basin Plan revision process. Numerous commenters recommended that efforts be undertaken to assign beneficial uses to some of the tributary streams, including effluent dominated water bodies, agricultural dominated water bodies and constructed conveyance facilities, either individually or on a categorical basis. The California Rice Industry Association and Valent USA have recommended specific classifications for addressing agricultural dominated water bodies and constructed agricultural facilities. The regulated community has suggested that protection of beneficial uses in these water bodies might not require as stringent water quality objectives as are applied to the mainstream rivers and streams listed in the Basin Plan. A major effort is needed to designate beneficial uses for more water bodies.

Emphasis should be placed on water bodies where permitting actions are anticipated or where other compliance issues have been raised (i.e., agricultural dominated water bodies). There are separate issue write-ups for effluent dominated water bodies and agricultural dominated water bodies.

Priority: High/Medium

Current Action: These items are discussed separately.

**Issue: Policy to Control Releases to Fresno and Berenda Slough (near Chowchilla)**

Discussion: There are periodic flooding problems in Fresno and Berenda Slough. These problems may be linked to the timing of upstream releases from reservoirs. Triangle T Ranch, Inc. recommends that the Basin Plan be amended to include a policy that would control winter releases and conserve them for later use downstream.

Priority: Low

Current Action: None. This is a water rights issue, not a basin planning issue.

**Issue: Beneficial Use Designations and Water Quality Objectives to Protect Rare, Threatened or Endangered Species**

Discussion: The US Department of Interior, Bureau of Land Management recommended that water quality objectives be adopted to protect rare, threatened and endangered species. The Basin Plan does not specifically identify beneficial uses of rare, threatened or endangered. The Basin Plan contains water quality objectives to protect aquatic life and wildlife habitat beneficial uses. Staff are not aware that any rare, threatened or endangered species require additional levels of protection. The Department should submit any information that they are aware of that indicates that rare, threatened or endangered species require water quality objectives that are different than those contained in the Basin Plan.

Priority: Low

Current Action: None

Current Resources:	None
Additional Action:	The Regional Board could consider designating rare, threatened or endangered beneficial uses, if adequate supporting information was submitted. Staff will make a determination when information has been submitted.
Additional Resource Requirements:	0.5 py for one year
<b>Issue:</b>	<b>Water Quality Problems Related to Wastewater Discharges in the Delta from Small Vessels</b>
Discussion:	<p>Recreation vessel waste discharges in the Delta have the potential to impact beneficial uses. No comprehensive assessment program has been undertaken to define the extent of the problem. Most of the vessels in the Delta are small and have no bathroom facilities or the boat operators do not use the pumpout facilities. Larger vessels have bathrooms but there may be inadequate pumpout facilities. The Delta Protection Commission has raised concerns about inadequate bathroom facilities and suggests evaluating the number of available facilities and locations. The Commission further commented that water quality monitoring in areas popular for extended mooring and/or popular for water-contact recreation would be appropriate.</p> <p>The Regional Board has limited authority over vessel sanitation devices. The San Francisco Bay Regional Board has implemented a reasonably successful educational program to address this issue. A similar program needs to be implemented in the Delta.</p>
Priority:	Low
Current Action:	None - lack of resources
Current Resources:	None
Additional Action:	Initiate program similar to San Francisco Bay Regional Board. This effort would have only a small basin planning component that would include development of a policy. Most of the work would involve working with marina owners, county officials, and the Coast Guard to ensure implementation.

Additional Resource  
Requirements:

0.5 py for several years. In addition, about \$30,000 per year would be required to support a monitoring effort to document problems and solutions.

**Issue:**

### **Bacteria Water Quality Objectives for Contact Recreation**

Discussion:

Several comments were received on the bacteria water quality objectives for contact recreation. The Department of Water Resources requested the Regional Board to update objectives for bacteria to be consistent with the recent Department of Health Services standards; the Sacramento Regional County Sanitation District, the City of Woodland and the Yolo-Solano Dischargers commented that the Regional Board should reaffirm or modify the current water quality objective for bacteria to ensure consistency between the NPDES permitting and the Basin Plan; and West, Yost and Associates commented that the water quality objective for bacteria for surface waters where contact recreation is likely should be reaffirmed as the applicable standard in permits rather than the “Uniform Guidelines for Wastewater Disinfection” authorized by the Department of Health Services (DHS).

The current edition of the Basin Plan has the following water quality objectives for bacteria:

In waters designated for contact recreation (REC-1), the fecal coliform concentration, based on a minimum of no less than 5 samples in a 30-day period, shall not exceed a geometric mean of 200/100 ml., nor shall more than ten percent of total number of samples collected in a 30-day period to exceed 400/100 ml. (Site specific objectives, more stringent than the aforementioned are specified for Folsom Lake.)

For groundwater used for domestic or municipal supply (MUN), the most probable number of coliform organisms over any seven-day period shall be less than 2.2/100 ml.

In drafting effluent limits for contact recreation for National Pollution Discharge Elimination System (NPDES) permits, the Regional Board consults the DHS, on a case-by case basis rather than use the Basin Plan water quality objectives for bacteria. This consultation is undertaken because DHS has the responsibility for protecting public health and because DHS has not adopted regulations for the discharge of waste water to surface waters. Some dischargers question the appropriateness of setting effluent limits in NPDES permits based on values which have not been formally adopted by the Regional Board



through a Basin Plan amendment process or for using limits which have not been formally adopted into state regulations.

The water quality objectives for contact recreation were developed based on US EPA guidelines established in 1976. These guidelines were based on observations of detectable health effects at concentrations of 2,300 to 2,400 coliform organisms per 100 ml, which were translated to a fecal coliform concentration of 200/100 ml including a safety factor. US EPA health effect studies conducted since adoption of the guidelines found evidence of gastrointestinal illness associated with waters meeting the US EPA standard and which contained low levels of indicator organisms *E. coli* and enterococci. The increased illness rates due to ingestion of between 10 to 50 ml of water were calculated at 8/1,000 swimmers. The US EPA has since rescinded the guidelines. However, this value is still widely used as an indicator of the sanitary quality of fresh surface waters.

Section 101(a)(2) of the Federal Clean Water Act states that *it is the national goal that wherever attainable, an interim goal of water quality which provides for... recreation in and on the water be achieved by July 1, 1983*. Therefore, the Regional Board considers contact recreation as a beneficial use of the receiving water in drafting NPDES permits. As previously noted, the Basin Plan bacteria objective, which was based on the former US EPA guidelines, is not protective of public health in a stream that receives waste water effluent. The Basin Plan objective is the least stringent concentration allowed in receiving water. Where warranted, more stringent receiving water goals may be appropriate. Effluent limits can be specified to assure that concentrations in receiving water are at levels that protect public health. DHS has not adopted regulations for the protection of public health for contact recreation in streams that are subject to discharges of waste water. However, DHS has adopted regulations for the use of reclaimed water including its use for supply of unrestricted recreational (body contact) impoundments. The focus of the regulations are with the protection of public health and with regards to supply for unrestricted recreational impoundments considers the potential for ingestion.

The reclamation regulations are found in Title 22, Division 4 of the California Code of Regulations. Section 60315 of these regulations outline the treatment requirements for the use of reclaimed water as a source for unrestricted recreational impoundments. The treatment requirements include adequate disinfection, oxidation, coagulation, clarification, and filtration. Adequate disinfection is defined as waste water which has a median number of coliform organisms that does not exceed 2.2 per 100 ml. and the number of coliform organisms does not exceed 23 per 100 ml. in more than one sample within any 30-day

period. The median value is determined from the bacteriological results of the last seven days for which the analyses have been completed. Coagulation, clarification and filtration remove virus and parasites that are not readily susceptible to chlorination. For reclaimed water to be used as a source supply for a restricted recreation (non-body contact) impoundment, the regulations specify treatment to include adequate disinfection and oxidation where adequate disinfection is defined as waste water containing a median number of coliform organism that does not exceed 2.2 per 100 ml. No maximum value is specified for restricted recreation. These regulations have formed the basis for the recommendation that DHS provides the Regional Board. DHS takes into consideration the amount of available dilution in the receiving water in providing recommendations to the Regional Board. However, the focus of the reclamation regulations is on providing adequate treatment to remove pathogenic organism to protect human health from ingestion.

The reclamation regulations were adopted in 1977 and are currently undergoing revision due to the increase and expanded use of reclaimed water. The proposed regulations were developed with input from representatives from waste water treatment and recycling agencies, local health departments and affected state agencies. The proposed regulations represent a general consensus agreement of this group that these regulations would be the least burdensome to the regulated community while still maintaining appropriate public health protection. Public hearings were held in connection to the proposed regulations and other provisions related to regulation adoption have been adhered to including consideration of economic impacts. The regulations are presently undergoing review by the Office of Administrative Law (OAL). Once approved by OAL, the regulations become effective. These regulations are not expected to change significantly with respect to contact recreation.

Human pathogens in surface waters are too numerous and too difficult to assess to screen for on a routine basis. Thus, organisms, which are indicators of the potential presence of pathogens, are used to assess the sanitary quality of the water. Two types of commonly used indicator organisms are Fecal Coliform and Total Coliform. Fecal Coliform is less resistant to disinfection than most water borne pathogens and less resistant than Total Coliform. Thus, it is possible for treated effluent to have low levels of Fecal Coliform while having levels of pathogens that are of public health concern. The more resistant Total Coliform organisms are better indicators of the pathogenic quality of water. If the Basin Plan Fecal Coliform concentrations were allowed in sewage treatment plant effluents, much greater concentrations of human pathogens would be discharged than would be safe.

Fecal Coliform is a subgroup of the Coliform bacteria group. Coliform bacteria include four genera of bacteria which grow variously in the intestines of warm blooded animals (and are therefore an indicator of fecal contamination) as well as in soil. For a sample taken from a river or lake, a high coliform concentration may indicate sewage, fecal contamination from non-human animals, or coliform from soil. Fecal Coliform do not grow in soils. Thus, for sampling rivers and lakes, the more complex and expensive Fecal Coliform test is used, which clarifies that there is fecal contamination in the waters. Thus, for general sanitary quality of waters not impacted by sewage disposal, the Basin Plan Fecal Coliform should apply. For sampling sewage treatment plant effluents, Total, rather than Fecal, Coliform is routinely analyzed because all the Coliform present in the wastewater would be of fecal origin.

Priority: Low

Current Action: For clarity purposes, DHS should adopt disinfection regulations for contact recreation and the Regional Board adopt these regulations by reference into the Basin Plan. This should be undertaken by DHS since it is the agency responsible for public health. In the absence of formal regulations by DHS, it is appropriate for the Regional Board to continue consulting DHS on a case-by case basis in issuing bacteria effluent limits to protect contact recreation in NPDES permits. DHS recommendations are based on established regulations for protection of public health from contact recreation from the use of reclaimed water and are applicable to discharges to surface water.

Current Resources: None

**Issue: Recreation Beneficial Use for Old Alamo and Alamo Creeks in Solano County**

Discussion: West Yost and Associates recommended that the contact recreation beneficial use not be applied to Old Alamo and Alamo Creeks in Solano County. Information would need to be submitted to the Regional Board to support this request.

Priority: Low

Current Action: No action necessary until information is submitted to support the request.

Current Resources: None

**Issue:****Groundwater Contamination in Rancho Cordova****Discussion:**

The Department of Health Services opposes the injection of inadequately characterized and inadequately treated water into the drinking water aquifer used for municipal and domestic purposes. They believe that groundwater contamination has occurred in the Rancho Cordova area because the Regional Board allowed this to happen. To remedy the situation, they request that the Basin Plan identify beneficial uses of the groundwater basin and establish water quality objectives to protect those uses. Further, they recommend that drinking water standards (Maximum Contaminant Levels) not be used to set cleanup levels. Citizens Utility Company had similar concerns and suggested that the Regional Board adopt more restrictive discharge requirements to protect groundwater and to consider a prohibition on discharge of wastes to aquifers essential for public water supply. They further requested a groundwater survey to identify contamination in groundwater resources in their service area.

The Basin Plan states that all groundwaters in the Region are considered as suitable or potentially suitable, at a minimum, for municipal and domestic water supply (MUN), agricultural supply (AGR), industrial supply (IND), and industrial process supply (PRO). In making exceptions to the beneficial use designation of municipal and domestic supply (MUN), the Regional Board will apply the criteria in State Water Board Resolution No. 88-63, Sources of Drinking Water Policy. Similar criteria are included for making exceptions for agricultural supply (AGR) and industrial supply (IND or PRO). The groundwater in Rancho Cordova has these beneficial uses.

The Basin Plan has numerical water quality objectives to protect municipal and domestic supplies. The numerical objectives are the MCLs that have been adopted by the Department of Health Services in Title 22 of the California Water Code. Anti-degradation provisions also need to be considered. The implementation chapter of the Basin Plan includes policies for applying water quality objectives and for clean-up of contaminated groundwater. In both instances (setting discharge limits or cleanup goals) the minimum requirement is achieving the water quality objectives and the most stringent is achieving background (assuming that the background is uncontaminated). Anti-degradation provisions must be considered, but the anti-degradation policy (State Water Board Resolution 68-16) provides conditions under which some degradation may be allowed. In making decisions on permit effluent limits and cleanup goals, the Regional Board must determine the highest water quality that can reasonably be attained (which does not exceed the water quality objectives) considering all

demands being made on those waters and the total values involved. When the Regional Board makes such determinations, interested parties, including the Department of Health Services, have the opportunity to present arguments supporting their positions. The Regional Board will weigh available evidence and make decisions. This process is consistent with the language in Porter-Cologne and State Water Board Resolution 68-16.

Priority: Low

Current Action: None. A prohibition will be considered on a case-by-case basis. It will require personnel resources of 0.2 personnel years or more each time a prohibition is reviewed or considered.

**Issue: Groundwater Beneficial Uses**

Discussion: The Basin Plan states that all groundwaters in the Region are considered as suitable or potentially suitable, at a minimum, for municipal and domestic water supply (MUN), agricultural supply (AGR), industrial supply (IND), and industrial process supply (PRO). In making exceptions to the beneficial use designation of municipal and domestic supply (MUN), the Regional Board will apply the criteria in State Water Board Resolution No. 88-63, Sources of Drinking Water Policy. Similar criteria are included for making exceptions for agricultural supply (AGR) and industrial supply (IND or PRO). The California Mining Association requests that the Regional Board evaluate and designate on a site specific basis appropriate beneficial uses for those groundwaters identified by stakeholders during the triennial review process. They request that this designation be completed by the completion date of the triennial review. Also, they request that a procedure be established in the Basin Plan authorizing the Regional Board to designate on a site specific basis appropriate beneficial uses for those groundwaters specifically identified in the Basin Plan.

Changing the beneficial uses of groundwater basins is not a task that could be accomplished in a few months. The Source of Drinking Water Policy describes the circumstances under which the groundwater beneficial use of municipal and domestic supply could be removed. The action to remove this beneficial use would be accomplished through a formal basin plan amendment, which would include a public hearing. Technical information would have to be submitted and evaluated regarding the request for an exemption.

Priority: Low

Current Action: None. This policy is consistent statewide.

**Issue: Groundwater Objectives**

Discussion: Sacramento County Regional Sanitation District and others have requested that the numerical objectives for chemical constituents for groundwater be reevaluated to assure consistency between the Basin Plan and NPDES permits. Yolo-Solano County Dischargers requested that the Regional Board cease using the groundwater limitations adopted in recent permits until their concerns are addressed. Another related concern is the Regional Board application of Resolution 68-16 to set permit limits that require “no change in background water quality”.

The chemical constituents objectives for protection of domestic or municipal supply reference the MCLs that are contained in Title 22 of the California Code of Regulations. These are receiving water limitations. NPDES effluent limits are determined to assure that the receiving water limitation is not exceeded. The determination takes into account numerous factors, such as available dilution, mixing characteristics, and receiving water quality. The objectives apply consistently throughout the Region. Effluent limits may vary depending on local conditions, but the objectives are still applied consistently. The bacteria issue is addressed elsewhere. The water quality objectives currently in the Basin Plan are applicable until they are revised or removed.

State Water Board Resolution No. 68-16 requires the maintenance of the existing high quality of water (i.e., background) unless a change in water quality “will be consistent with maximum benefit to the people of the State...”. Chapter IV of the Basin Plan explains how the Regional Board applies water quality objectives to ensure the reasonable protection of beneficial uses of water and how the Regional Board applies Resolution No. 68-16 to promote the maintenance of existing high quality waters. This explanation is included in the Regional Board Policy for Application of Water Quality Objectives which was added to the Basin Plan in 1994.

Priority: Low

Current Action: None necessary.

**Issue: Groundwater Recharge Beneficial Use**

Discussion: The Basin Plan does not specifically designate any water bodies as having the beneficial use of groundwater recharge. US EPA recommends that making such designations should be high priority.

The Basin Plan designates most surface waters as having municipal and domestic supply and various aquatic life beneficial uses. The water quality needed to protect these beneficial uses should be sufficient to allow its use for recharge. If commenters are aware of particular circumstances where this is not true, and there is information to support a request for such a designation in a specific instance, the information should be submitted to the Regional Board for consideration. Otherwise, this activity would be low priority.

Priority: Low

Current Action: No action until information is submitted to support the request.

**Issue: Agricultural Drainage Wells**

Discussion: US EPA is concerned that agricultural drainage is being transported to groundwater by the use of agricultural drainage wells. They recommend that this should be considered as part of existing agricultural drainage water management activities.

Staff has conducted a preliminary survey and has not been able to confirm a widespread use of agricultural drainage wells. If such information is available, staff will incorporate this issue into our existing agricultural drainage water management activities and groundwater policies development described under issue # 11..

Priority: Low

Current Action: No action until information is submitted to support the request.

**Issue: Application of the Antidegradation Policy**

Discussion: Commenters believe that the Regional Board has applied Resolution No. 68-16 in a manner that has resulted in waste discharge requirements being impossible to meet, contradicts the Wastewater Reuse Policy and does not provide maximum benefit to the people of the state. Yolo-Solano County Dischargers recommended that the

Regional Board cease putting language in permits that requires “no change in background water quality”. West Yost and Associates recommended that the Regional Board adopt a policy stating that “irrigation reuse of properly treated municipal or industrial wastewater with an average mineral salinity not exceeding typical irrigation source waters in the area by over 300 mg/l shall automatically be considered to be consistent with the maximum benefit to the people of the state provided that such reuse does not cause established water quality limits for beneficial uses to be exceeded”.

The Basin Plan contains numerical water quality objectives to protect surface and groundwater. Water quality objectives are defined in the Water Code as “limits or levels of water quality constituents or characteristics that are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area”. State Water Board Resolution No. 68-16 requires the maintenance of the existing high quality of water (i.e., background) unless a change in water quality “will be consistent with maximum benefit to the people of the State...”. Chapter IV of the Basin Plan explains how the Regional Board applies water quality objectives to ensure the reasonable protection of beneficial uses of water and how the Regional Board applies Resolution No. 68-16 to promote the maintenance of existing high quality waters. This explanation is included in the Regional Board Policy for Application of Water Quality Objectives which was added to the Basin Plan in 1994.

On a case-by-case basis the Regional Board makes determinations on which changes are consistent with maximum benefit to the people of the state. These determinations are made in public hearings, with all parties given the opportunity to present information. The Regional Board considers the Wastewater Reuse Policy in making these determinations. The proposed amendment to the reuse policy would require a significant amount of staff time to evaluate the proposal and its environmental consequences. Water quality objectives currently in the Basin Plan are applicable until they are revised or removed. Staff believes that the present application of Resolution 68-16 is appropriate. Determinations on the maximum benefit to the people of the State are made on a case-by-case basis and all parties are given the opportunity to influence the decision. This practice is necessary because all relevant facts and circumstances must be considered when determining the maximum benefit to the people of the State.

Priority:

Low

Current Action:

None. Consideration of establishing a policy to address irrigation reuse of reclaimed water is a statewide issue that should be addressed in a statewide plan.



**Issue:** **Water Quality Objectives for Carbofuran, Malathion, Methyl Parathion, Molinate, and Thiobencarb**

**Discussion:** The Basin Plan prohibits the discharge of irrigation return flows containing the five pesticides unless the discharger is following a management practice approved by the Regional Board. On a regular basis, the Department of Pesticide Regulation presents, for Regional Board approval, the management practices that are required to be implemented to control the levels of these five pesticides in surface waters. The management practices are not approved unless they are expected to meet performance goals that are included in the Basin Plan. The Basin Plan indicates that performance goals are to be periodically evaluated. Numerical water quality objectives have not yet been adopted for these five pesticides (except for a thiobencarb objective to protect municipal supplies).

Commenters have requested that numerical water quality objectives be adopted for the five pesticides. An important consideration in adopting the objectives is that the Regional Board would need to establish appropriate points of compliance and determine how to address agricultural dominated water bodies and constructed agricultural conveyances. Some specific language was proposed to define beneficial uses and objectives that should apply in these types of water bodies. Valent recommended that the Regional Board apply the numerical water quality objectives for the Sacramento River and the narrative toxicity objective for agricultural dominated water bodies and constructed agricultural drains.

The Sacramento River from Colusa Basin Drain to the Delta was included on the 1996 Clean Water Act 303(d) list of impaired water bodies because of elevated levels of the five pesticides. In the 1998 Clean Water Act 303(d) listing cycle, these pesticides in the Sacramento River were removed from the list because management practices had been implemented that resulted in reductions in the pesticides in the River to levels that no longer threatened beneficial uses. The existing performance goals appear to be protective and compliance in the Sacramento River appears readily achievable using existing management practices. A more pressing issue is to determine what pesticide levels should be allowed in agricultural dominated water bodies and constructed agricultural facilities. This would be a major undertaking. Estimated costs are about 1 py for three years (see issue on agricultural dominated water bodies). These water bodies are lower priority than the mainstream rivers, the Delta and lakes and reservoirs.

**Priority:** Low

Current Action:	None
Current Resources:	None
Additional Action:	The entire agricultural dominated water body issue needs to be evaluated and is discussed as a separate issue. However, judging from the comments received from numerous parties, the focus of this activity is mostly on pesticide issues (i.e., the rice pesticides and the organophosphate pesticides). This would be a major undertaking that would include defining a range of beneficial uses that are appropriate in agricultural dominated water bodies and determining what pesticide objectives would be appropriate to protect them.
Additional Resource Requirements:	It is estimated that 10 of the most significant water bodies of concern could be addressed by devoting 2 pys and \$50,000 for monitoring annually for three or four years. After this initial effort, it might be possible to proceed more rapidly by grouping water bodies into similar types.
<b>Issue:</b>	<b>Time Schedules for Compliance with Water Quality Objectives and Implementation Plans</b>
Discussion:	<p>Policy No. 8 in Chapter IV of the Basin Plan describes under which circumstances time schedules are appropriate. The Policy says: “Where the Regional Board determines it is infeasible to achieve immediate compliance with water quality objectives adopted by the Regional Board or the State Water Board, or with water quality criteria adopted by the US EPA, or with an effluent limitation based on these objectives or criteria, the Regional Board may establish in NPDES permits a schedule of compliance. ... In no event shall an NPDES permit include a schedule of compliance that allows more than ten years (from the date of adoption of the objective or criteria) for compliance with water quality objectives, criteria or effluent limitations based on the objectives or criteria.”</p> <p>The City of Lodi and the Sacramento Regional County Sanitation District have requested that the Basin Plan be amended to allow longer time schedules. The compliance schedule language was added to the Basin Plan in 1995 at the request of the discharger community. At that time the Regional Board considered all the information and comments from all interested parties.</p>
Priority:	Low

Current Action: None. The time period contained in the Basin Plan appears sufficient and no information has been submitted that would suggest that conditions have changed significantly since 1995.

**Issue: Consistency of CALFED and Basin Plan Goals**

Discussion: The City of Lodi commented that there is an inconsistency between CALFED and the Regional Board because the Basin Plan encourages land disposal and CALFED encourages increases in flow to help address some water quality problems. The Basin Plan has a wastewater reuse policy that encourages all types of reuse activities, including industrial and municipal supply, crop irrigation, landscape irrigation, groundwater recharge and wetland restoration. The policy also allows for land disposal of wastewater, when it is the best alternative. This policy is not inconsistent with CALFED. No action on this issue is proposed.

Priority: Low

Current Action: None. This policy is not inconsistent with CALFED. No action on this issue is proposed.

**Issue: Policy for Reducing Plant Bypasses**

Discussion: The Basin Plan does not contain a specific policy regarding plant bypasses and collection system overflows. Sacramento Regional County Sanitation District requests that a policy be added to the Basin Plan that requires a reduction of the frequency of overflows and bypasses that currently occur.

Priority: Low

Current Action: None. This is a permitting issue and is best handled through the permitting process.

**Issue: Bis(2-ethylhexyl)phthalate**

Discussion: US EPA has established a national ambient water quality criteria for bis(2-ethylhexyl)phthalate. West Yost & Associates recommended that if the state accepts this criteria, then the state should ban the use of bis(2-ethylhexyl)phthalate from all products sold or used in California.

Where compliance with the narrative toxicity objective is required to protect beneficial uses, the Regional Board adopts in permits on a case-by-case basis, numerical limitations that will implement the narrative objective. The Basin Plan expressly allows the Regional Board to consider numerical criteria and guidelines developed by other agencies and organizations. This method for implementing narrative objectives is also authorized by applicable federal regulations. Therefore, the Regional Board may refer to the US EPA criteria for bis(2-ethylhexyl)phthalate. The US EPA criteria are for receiving waters and are not synonymous with effluent limits. In setting effluent limits, the Regional Board considers, available dilution, characteristics of receiving water, what can be achieved with best available treatment technologies, and other factors.

Priority: Low

Current Action: None. The Regional Board does not have the authority to ban the use of bis(2-ethylhexyl)phthalate in products sold or used in California.

**Issue: National Toxics Rule Human Health Criteria**

Discussion: The City of Woodland contended that the National Toxics Rule human health criteria cannot be applied unless the Regional Board adopts the criteria into the Basin Plan. They therefore recommended that the Regional Board conduct such a review of the NTR criteria.

In various promulgations of the National Toxics Rule, the US EPA established ambient water quality criteria for specific waters in various states. Together with beneficial use designations, these limits become water quality standards for those waters. The Regional Board has no authority to modify federal regulations, such as the National Toxics Rule. For waters that were not specified in US EPA's rule making, these limits and other criteria provide guidance and recommendations on how to interpret narrative toxicity objectives in the Basin Plan. Where compliance with narrative objectives is required to protect beneficial uses, the Regional Board adopts, on a case-by-case basis, numerical limitations that will implement the narrative objectives. The Basin Plan expressly allows the Regional Board to consider numerical criteria and guidelines developed by other agencies and organizations. This method of implementing narrative objectives is also authorized by applicable federal regulations (See 40 CFR-122.44(d)(1)(vi)(B)). The Regional Board is not required to consider the Water Code Section 13241 factors when adopting limitations that implement narrative water quality objectives in the Basin Plan. When the Regional Board develops a numerical limitation for a narrative water quality objective,

the Regional Board is implementing an existing water quality objective and is therefore not required to consider factors identified in Water Code Section 13241 (See State Water Resources Control Board Order WQ 77-16, Pp. 20-27 - Pacific Water Conditioning Association, Inc.).

Priority: Low

Current Action: None necessary.

**Issue: Use of Title 22 MCLs as Water Quality Objectives**

Discussion: A Basin Plan water quality objective to protect domestic and municipal supplies states that waters shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in Title 22 of the California Code of Regulations. Yolo-Solano County Dischargers recommended deleting this provision because the incorporation by reference is prospective and automatically applies new or more stringent MCLs adopted by the Department of Health Services.

The Department of Health Services (DHS) adopts new MCLs in a public process that is essentially the same as the process that the Regional Board would go through to adopt objectives. There would be no purpose for the Regional Board to consider the same information that has already been considered in an open, public process by DHS. The MCLs become water quality objectives that must be met to protect the drinking water beneficial use.

Priority: Low

Current Action: None. There would be no purpose for the Regional Board to consider the same information that has already been considered in an open, public process by DHS.

**Issue: Selenium, Salt and Boron Load Reduction Responsibilities**

Discussion: Broadview Water District commented that farmers and districts should not be expected to control or reduce drainage water volume of selenium, salt, or boron generated from sources beyond their control.

Selenium control actions were updated in an amendment to the Basin Plan in May 1996. Much of the selenium control provisions adopted into the Basin Plan were based on a Consensus Letter submitted to the Regional Board by the parties to the Grassland Bypass Channel Project which included the San Luis Delta Mendota Water Authority (SLDMWA). The SLDMWA, through a joint power agreement, represents the water districts of the Grassland watershed, including Broadview Water District. Included within the Consensus Letter recommendations were monthly and annual regional selenium load limits for discharges to the San Joaquin River to be regulated by Waste Discharge Requirements (WDR) as effluent limits to be issued to the SLDMWA. Also, included was a schedule for selenium load reductions for the life of the project (five years). The Regional Board adopted a maximum annual regional selenium load limit for discharges to the San Joaquin River and issued WDRs for Grassland Bypass Channel Project to the US Bureau of Reclamation and the SLDMWA. These two agencies are accountable to the Regional Board for violation of WDR provisions.

Selenium load limits that were negotiated into the Use Agreement for the Grassland Bypass Channel Project were based on a 9-year record of discharges to the San Joaquin River. This record included all contributions of selenium including storm generated, Panoche Creek flooding, upslope drainage, and loads generated by Grassland Area Farmers (GAF). The analysis did not distinguish from the various sources. Additionally, within the Use Agreement, provisions were made for violations of monthly and annual load limits due to “unforeseeable and uncontrollable events”. While there are no such provisions in the Basin Plan, it is a factor that the Regional Board could consider in the event of violation of WDR effluent limits.

An economic incentive program is being developed by the GAF as one of the possible means for achieving selenium load reductions. Selenium load targets have been apportioned to the various water districts by the Steering Committee of the GAF and it is assumed that these are the load targets, which the District contends it cannot achieve. Selenium load targets for individual water districts were allocated by the Steering Committee of the GAF and, as such, districts, which exceed their targets, are accountable to the Steering Committee for the GAF and not the Regional Board.

Two policies in the Basin Plan apply to the issue of upslope contributions. The first of these is that “the entire drainage issue is being handled as a watershed management issue. The entities in the Drainage Problem Area and entities within the remainder of the Grassland watershed need to establish a regional entity with authority and responsibility for drain water management”. This first step has

been taken by the entities of the Drainage Problem Area through the joint powers agreement. If there are other entities contributing subsurface flows to the drainage problem area, these entities should participate in the regional control effort. In the event that GAF are unsuccessful at obtaining the participation of these other entities, a second policy in the Basin Plan which states that “upslope irrigation and water facility operators whose actions contribute to subsurface drainage flows will participate in the program to control discharges”, provides the Regional Board with the authority to develop control actions to reduce these contributions. These two policies are applicable to salt and boron as well as selenium.

Priority: Low

Current Action: No action is proposed at this time. In the near future, the Basin Plan implementation program will need to be reevaluated, since the waste discharge requirements will expire soon.

**Issue: Metals Objectives in Upper Sacramento River**

Discussion: The Department of Fish and Game recommends that the metals objectives in the Basin Plan that apply to the Sacramento River and tributaries upstream of Hamilton City be retained. They state that the water quality objectives for zinc, cadmium and copper have been extensively tested and are protective of the sensitive salmonid species.

Priority: Low

Current Action: None necessary.

**Issue: Metal Effluent Limits**

Discussion: The Department of Fish and Game, Region 1 has requested that the Regional Board review and revise the concentrations for allowable limits for metals and trace elements. In the 1994 Triennial Basin Plan review, various parts of the Basin Plan were edited and updated for clarity. Language was added to clarify that the metals objectives were dissolved concentrations rather than total. This was not a change, in that the Regional Board practice prior to 1994 was to consider the objectives as dissolved. Sometimes, to provide a wider margin of safety, effluent limits were included in permits that were designed to achieve in-stream concentrations below the objectives (i.e., the objective was applied as a total concentration). Permit limits must be

adopted to assure compliance with the water quality objectives. Permit limits vary depending on background levels of individual metals and what other sources of metals occur in the vicinity of the discharge (i.e., other dischargers). The California Toxics Rule is under development and this may result in changes to some of the metals objectives. No staff action is proposed.

Priority: Low

Current Action: None at this time.

**Issue: Toxicity of Copper in Municipal Effluents**

Discussion: El Dorado Irrigation District is concerned that copper limits in municipal NPDES permits are too stringent because the Regional Board does not adequately address the question of bioavailability. They recommend that the Regional Board should allow some simplified procedure (a bioassay for example) to demonstrate whether or not there is copper toxicity and not rely on US EPA criteria to set effluent limits.

Receiving water quality objectives for copper are applied as dissolved concentrations. When the Regional Board relies on the US EPA copper criteria to implement the narrative toxicity objective, it is applied as a dissolved concentration. Permit writers are required to state effluent limits in terms of total concentrations. To determine what total effluent limits are appropriate, permit writers consider how much of the effluent copper is likely to be dissolved in the receiving water. In the absence of detailed information from the receiving water (downstream of the mixing zone, if applicable), and to assure protection of the receiving water, staff must be conservative in this determination. Therefore, staff may assume that all the copper is potentially dissolved ( i.e., bioavailable). Detailed studies in specific receiving waters could be conducted to determine what percent of the effluent copper actually ends up being dissolved in the receiving water. This percent could be used to assist in calculation of appropriate total copper effluent limits. Studies conducted for this determination must take into account potential changes in downstream water quality conditions that could affect copper availability (e.g., changes in hardness or pH because of the entry of a side stream).

The recommendation that some simplified procedure (bioassay for example) be allowed as the sole method of evaluating copper toxicity in effluents would not be appropriate. The Clean Water Act and regulations authorize and require the use of an integrated strategy for



achieving and maintaining water quality standards. For protection of aquatic life, the integrated strategy involves the use of three control approaches: the chemical specific control approach, the whole effluent toxicity control approach, and the biological criteria/bioassessment and biosurvey approach. Reliance on only one approach would result in only a partially effective program for toxics control. In other words, each of the three approaches are applied independently.

Priority: Low

Current Action: None at this time.

**Issue: TMDL Policy for Metals in Upper Sacramento River**

Discussion: City of Redding recommends that the Basin Plan be amended to provide for exceptions to water quality objectives or provisions implementing those objectives on a case by case basis. The City is concerned that there are inadequate policies in the Basin Plan to assure that a TMDL developed for metals in the upper Sacramento River would distribute the loads in an equitable manner. There is concern that Iron Mountain Mine would be assigned too large a share of the load. The State and Regional Board is currently involved in litigation concerning Iron Mountain Mine.

Priority: Low

Current Action: None at this time.

**Issue: Averaging Periods for Water Quality Objectives**

Discussion: The numerical objectives in Table III-I of the Basin Plan specify (except for selenium, boron and molybdenum) that the objectives are maximum concentrations. Commenters have recommended that averaging periods be established for the objectives that are currently implemented as maximum concentrations. The Yolo-Solano County Dischargers recommended suspension of adoption of NPDES permit limitations until appropriate averaging periods are adopted. US EPA recommends 1 hour and 4 day averaging periods for acute and chronic numerical and narrative toxicity criteria. The National Toxics Rule includes averaging periods for numerical objectives. The California Toxics Rule, which is currently under development, includes averaging periods for the constituents currently listed in Table III-I of the Basin Plan. The California Toxics Rule provisions will likely override the

existing Basin Plan objectives. A separate Regional Board basin planning action is therefore not necessary. The existing Basin Plan objectives are applicable until they are amended or replaced. Permit effluent limits will need to be set to achieve compliance with the objectives, at a minimum.

Priority: Low

Current Action: None at this time. The California Toxics Rule provisions will likely override the existing Basin Plan objectives. A separate Regional Board basin planning action is therefore not necessary.

**Issue: Mercury Objectives and Permit Limits**

Discussion: Mercury has been identified as a problem in the Bay/Delta and tributaries and in Clear Lake and Lake Berryessa because it accumulates in aquatic organisms to levels that pose a threat to predator species and people that eat fish. Elevated mercury levels can be expected in areas where mercury was mined (Coast Range), where mercury was used to extract gold (Sierra Nevada and Cascade Range), and in downstream water bodies. Therefore, for most NPDES facilities, mercury is a concern in the effluent. The Basin Plan does not contain a numerical objective for mercury. To establish effluent limits, staff considers material and relevant information submitted by the discharger and other interested parties and numerical criteria and guidelines for toxic substances developed by state and federal agencies (i.e., US EPA criteria). A commenter recommended that effluent limits for mercury should not be included in permits if fish tissue analysis in the immediate receiving water does not show a problem. Studies have not been conducted in all receiving waters to evaluate whether there are problems in aquatic biota. Also, the permit writer must consider whether the effluent will impact downstream waters that may be more sensitive to mercury than the immediate receiving water (i.e., lakes and the Delta) or will contribute to a downstream loading problem. Permit writers will need to make determinations about mercury effluent limits on a permit by permit basis. However, the Regional Board is in the process of working with stakeholders to develop load reduction programs for mercury on a watershed wide basis. Part of this effort will include an evaluation of loads from NPDES facilities.

Priority: Low

Current Action: None necessary.

**Issue: Dissolved Oxygen Objectives**

Discussion: The basin plan includes general dissolved oxygen objectives that apply to all water bodies designated as supporting warm freshwater habitat, cold freshwater habitat and fish spawning. The objectives are applied as minimum levels that are not to be exceeded at any time. These objectives have existed in the Basin Plan since its original adoption in 1975. The City of Stockton and the El Dorado Irrigation District have stated that the Basin Plan objectives are not consistent with updated technical information presented by US EPA and their criteria documents. The contention is that the *“never to be exceeded criteria”* is unnecessarily strict. This objective is difficult to meet, particularly in effluent dominated water bodies. The existing objectives are consistent with the objectives contained in other Regional Board Basin Plans. Also, monitoring in receiving waters is typically not frequent enough to fully characterize how dissolved oxygen levels vary spatially, diurnally, and seasonally. With limited monitoring, anytime low dissolved oxygen levels are measured it is a concern. Site-specific objectives that included averaging periods could be proposed at sites where dischargers were willing to conduct more comprehensive monitoring that would measure dissolved oxygen levels on a frequent enough basis to make averaging periods a meaningful and equally protective objective.

Priority: Low

Current Action: None necessary.

**Issue: pH Objectives**

Discussion: The general pH objective in the Basin Plan is that *“pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh water designated for cold or warm fresh water habitat”*. El Dorado Irrigation District has recommended that the 0.5 unit change limit should be deleted because US EPA criteria published in 1986 indicates that it is unnecessary.

Staff has reviewed the 1986 US EPA criteria. One part cautions that rapid increases in pH can cause increased ammonia concentrations that can be toxic. Ammonia has been shown to be 10 times as toxic at pH 8.0 as at pH 7.0. Ammonia toxicity is often a problem in effluents from wastewater treatment plants. The 1986 US EPA criteria also says that rapid fluctuations in pH that are caused by waste dischargers should be avoided.

Priority: Low

Current Action: Staff does not believe at this time that it is a priority to conduct a general review of the pH objective. However, the issue needs some attention as part of a general evaluation of appropriate effluent limits for effluent dominated water bodies. (see effluent dominated water body issue).

**Issue: Point of Application for Water Quality Objectives**

Discussion: The California Rice Industry Association has stated that no meaningful analysis of objectives, and in particular, pesticides, can be made without first knowing where the objective applies. The Basin Plan includes water quality objectives that apply to specific water bodies, water quality objectives that are linked to specific beneficial uses of water bodies and water quality objectives that apply to all the waters. For pesticides, there is a water quality objective for thiobencarb of 1.0 ug/l in waters designated for municipal supply and a no detectable objective for chlorinated hydrocarbons. The chlorinated hydrocarbon objective applies in all water bodies and the thiobencarb objective applies in water bodies designated for municipal supply in Table II-I. The same thiobencarb objective would generally apply to all water bodies tributary to waters that have been designated for municipal supply. Where this designation is not appropriate, the Basin Plan can be amended to include the correct designation of beneficial uses. Specific information is needed to support such changes to the Basin Plan. Pesticides other than the two mentioned above are governed by the narrative toxicity objective. This objective applies to all waters. The implementation chapter of the Basin Plan includes performance goals for carbofuran, malathion, molinate, methyl parathion and thiobencarb. These performance goals apply to all waters. Site specific objectives can be developed where information is developed that indicates that some other objective is appropriate to support the beneficial uses of a water body. Staff agrees that significant work is needed to determine what beneficial uses are appropriate for agricultural dominated water bodies and for constructed agricultural drains and to determine appropriate water quality objectives for them. (See agricultural dominated water body issue.)

Priority: Low

Current Action: None at this time.

**Issue: Chlorinated Hydrocarbon Pesticide Water Quality Objective**

Discussion: The chlorinated hydrocarbon pesticide objective is no detectable levels. This objective was included when the Basin Plan was first adopted in 1975. The rationale appeared to have been to make sure that levels of these constituents did not increase above what was present in receiving waters in 1975. As detection methods have improved, these pesticides have been detected more and more in receiving waters and effluents. In some cases, dischargers have had difficulty complying with this objective and they question whether such a stringent objective is needed in light of the high cost of compliance. The Sacramento Regional County Sanitation District, West Yost and Associates, the City of Woodland, Yolo-Solano Dischargers and Valent USA have suggested that the objective may be inconsistent with the water code and that this objective should be replaced with new numerical objectives.

Compliance with this objective has been a problem for only a minor number of facilities. Staff believes that facilities that are having difficulty meeting the objectives have source control problems within their system that can be corrected. Most of the chlorinated hydrocarbon pesticides are no longer used, but they continue to exist in the soil and do enter aquatic food chains where they accumulate to levels of concern. There is significant concern that this group of pesticides may be endocrine disrupters. Environmental levels are already too high. The sources from past activities should not be causing permit violations. Other sources can and should be controlled to the maximum extent possible. Most facilities can meet this objective by having no detectable in their discharge.

Priority: Low

Current Action: None at this time.

**Issue: Delta Dredging Problem Description**

Discussion: The Implementation Chapter of the Basin Plan contains a brief discussion of the effects of dredging activities in the Delta. The discussion focuses on water quality problems and potential beneficial use impacts of dredging operations. The Delta Protection Commission, G. Fred Lee, and the Resources Agency have requested that the discussion be amended to clarify that there are beneficial opportunities associated with dredging, such as reuse of dredged material for levee maintenance. Staff agrees with these comments.

Priority: Low

Current Action: Appropriate language will be considered in the next editing but a more thorough review of dredging is likely to be done under the CALFED program.

Current Resources: None

**Issue: Delta Dredging Policy**

Discussion: There are numerous projects throughout the Delta that are proposed by CALFED and others that propose different uses for dredged material. There is no information in the basin plan to guide staff in determining what quality of sediment is appropriate for various uses. As a result, Regional Board staff must review each project and establish project specific criteria and monitoring requirements. This can lead to significant delays in initiating projects. G. Fred Lee has suggested that the Basin Plan needs to have a policy to address various dredged material use scenarios, in order to assure that projects can be implemented in a timely manner. Staff agrees with this recommendation and are currently working with CALFED to develop the information that will be needed to establish the policy.

Priority: Low

Current Action: No immediate basin planning action is proposed at the present time, but a more thorough review of dredging is likely to be done under the CALFED program (see issue #49)..

**Issue: Mixing Zone Policy with Regards to Fish Passage**

Discussion: The existing policy on mixing zones is contained in Chapter IV, under the Policy for Application of Water Quality Objectives. With regards to mixing zones, the policy says that *"In conjunction with the issuance of NPDES and storm water permits, the Regional Board may designate mixing zones within which water quality objectives will not apply provided the discharger has demonstrated to the satisfaction of the Regional Board that the mixing zone will not adversely impact beneficial uses. If allowed, different mixing zones may be designated for different types of objectives, including but not limited to, acute aquatic life objectives, chronic aquatic life objectives, human health objectives, and acute and chronic whole effluent toxicity objectives, depending in part on the averaging period over which the objectives*

*apply*". The policy also states that, "*pursuant to US EPA guidelines, mixing zones designated for acute aquatic life objectives will generally be limited to a small zone of initial dilution in the immediate vicinity of the discharge*". The Department of Fish and Game requests an addition to the policy that states that "in no case will the mixing zone interfere with the ability of aquatic life to move safely upstream or downstream of the discharge".

The existing policy states that mixing zones cannot impact beneficial uses. Migration upstream and downstream is a recognized beneficial use. Therefore, the existing policy would not allow a mixing zone to interfere with migrations.

Priority: Low

Current Action: None necessary

**Issue: Use of Numeric Chronic Limit as part of Narrative Toxicity Objective**

Discussion: The Basin Plan contains a narrative toxicity objective that states "*that all waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. Compliance with the objective is determined by analyses of indicator organisms, species diversity, population density, growth anomalies, and biotoxicity tests of appropriate duration or other methods as specified by the Regional Board*". The Department of Fish and Game recommended that a numeric chronic toxicity limit of 1.0 TUC be added to the Basin Plan to effectively evaluate chronic toxicity endpoints. The Regional Board can use the EPA recommended numeric chronic endpoint. The same outcome can be obtained by evaluating available dilution capacity of receiving waters and assigning the effluent some reasonable portion of the load. This issue should be addressed in a statewide plan to assure consistency between the Regions. The State Board may address this issue in the Statewide implementation plan for the California Toxics Rule.

Priority: Low

Current Action: None at this time or use the statewide implementation plan for the California Toxics Rule.

**Issue:****Application of Narrative Toxicity Objective - General Clarification****Discussion:**

The Department of Pesticide Regulation and Novartis Crop Protection recommended that the Basin Plan be amended to describe more fully how compliance with the narrative toxicity objective will be measured and to indicate that the Regional Board can use bioassessments, probabilistic risk assessments, and other methods for determining ecological effects of pollutants in water bodies. El Dorado Irrigation District suggested that bioassay species should be representative of the natural conditions in the receiving water during the test period. West Yost and Associates recommended that if narrative toxicity objectives are being satisfied by conducting a representative bioassay test then US EPA criteria and other numerical criteria should not be applied in NPDES permits.

The Basin Plan contains a narrative toxicity objective that states *“that all waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. Compliance with the objective is determined by analyses of indicator organisms, species diversity, population density, growth anomalies, and biotoxicity tests of appropriate duration or other methods as specified by the Regional Board.”* The Regional Board has used toxicity testing protocols that have been developed by US EPA because they have been extensively tested and verified in natural settings. The species used in the tests are meant to serve as indicators of toxic conditions and EPA verification testing in natural systems has confirmed that they are good predictors. Staff uses a weight of evidence approach to determine compliance with the narrative objective. There is no set procedure. As indicated above, the language in the narrative objective allows use of various tools to make determinations. Probabilistic risk assessments are another tool that can be used. When the Regional Board makes determinations about toxicity and requests some type of activity to be undertaken to address the problem, the determinations are always done in a public setting allowing for the full array of stakeholder input. Thus, the determinations must be balanced and represent the maximum benefit to the people of the state. Regional Board staff would be willing to work with the Department of Pesticide Regulation and interested parties to define some methodology that would describe situations that will always be considered a problem. However, the Regional Board needs to be able to apply their judgment to a wide array of situations that cannot be catalogued and described in sufficient detail to cover all but the most obvious situations.



The recommendation that some simplified procedure (bioassay for example) be used as the sole method of evaluating toxicity in effluents would not be appropriate. The Clean Water Act and regulations authorize and require the use of an integrated strategy for achieving and maintaining water quality standards. For protection of aquatic life, the integrated strategy involves the use of three control approaches: the chemical specific control approach, the whole effluent toxicity control approach, and the biological criteria/bioassessment and biosurvey approach. Reliance on only one approach would result in only a partially effective program for toxics control. In other words, each of the three approaches are applied independently. In addition, the bioassays are not designed to measure chronic effects, whereas US EPA numerical criteria are designed to prevent chronic impacts.

The narrative toxicity objective, as stated in the Basin Plan, applies to all surface waters. The application of this objective in agricultural dominated water bodies poses some significant issues that need to be addressed.

Priority: Low

Current Action: None

Current Resources: None

Additional Action: As the issue relates to agricultural dominated water bodies.

Additional Resource Requirements: See agricultural dominated water bodies issue.

**Issue: Application of Narrative Toxicity Objective with Regards to US EPA Ambient Water Quality Criteria**

Discussion: The Basin Plan contains a narrative toxicity objective that states that all waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. Compliance with the objective is determined by analyses of indicator organisms, species diversity, population density, growth anomalies, and biotoxicity tests of appropriate duration or other methods as specified by the Regional Board. In setting effluent limits, staff often uses US EPA criteria as the receiving water goal (in the absence of Basin Plan numerical objectives). Commenters (e.g., Yolo-Solano Dischargers) contended that the US EPA criteria cannot be used in this manner unless the Regional Board first considers

economics and the other factors in the Water Code and complies with CEQA.

Where compliance with narrative objectives is required to protect beneficial uses, the Regional Board adopts, on a case-by-case basis, numerical limitations that will implement the narrative objectives. The Basin Plan expressly allows the Regional Board to consider numerical criteria and guidelines developed by other agencies and organizations. This method of implementing narrative objectives is also authorized by applicable federal regulations (See 40CFR-122.44(d)(1)(vi)(B)). The Regional Board is not required to consider the Water Code Section 13241 factors when adopting limitations that implement narrative water quality objectives in the Basin Plan. When the Regional Board develops a numerical limitation for a narrative water quality objective, the Regional Board is implementing an existing water quality objective and is therefore not required to consider factors identified in Water Code Section 13241 (See State Water Resources Control Board Order WQ 77-16, Pp. 20-27 - Pacific Water Conditioning Association, Inc.).

Priority: Low

Current Action: None

Current Resources: None

Additional Action: As the issue relates to effluent dominated water bodies.

Additional Resource Requirements: See effluent dominated water bodies issue.

**Issue: Application of Narrative Toxicity Objective with Regards to National Toxics Rule and California Toxics Rule**

Discussion: The issue is similar to the previous issue on use of US EPA criteria. The only difference is that in this case the standards have actually been adopted by US EPA according to considerations included in the Clean Water Act. The Clean Water Act requirements are not identical to considerations that are required by CEQA and the Water Code in adopting state water quality objectives. Where these standards are applicable to California, they must be implemented.

Priority: Low

Current Action: None needed

**Issue: Acute Toxicity in Mixing Zones**

Discussion: Yolo-Solano Dischargers have requested language be added to the Basin Plan to clarify that acute toxicity may be allowed in mixing zones. The existing policy on mixing zones is contained in Chapter IV, under the Policy for Application of Water Quality Objectives. With regards to mixing zones, the policy says that *“In conjunction with the issuance of NPDES and storm water permits, the Regional Board may designate mixing zones within which water quality objectives will not apply provided the discharger has demonstrated to the satisfaction of the Regional Board that the mixing zone will not adversely impact beneficial uses. If allowed, different mixing zones may be designated for different types of objectives, including but not limited to, acute aquatic life objectives, chronic aquatic life objectives, human health objectives, and acute and chronic whole effluent toxicity objectives, depending in part on the averaging period over which the objectives apply”*. The policy also states that, *“pursuant to EPA guidelines, mixing zones designated for acute aquatic life objectives will generally be limited to a small zone of initial dilution in the immediate vicinity of the discharge”*. The narrative toxicity objective in Chapter III states that *“all waters shall be maintained free of toxic substances ...”*, which seems to be a contradiction of the policy in Chapter IV. However, at the beginning of Chapter III, there is a discussion (under Point 3) which indicates that the objectives contained in the Basin Plan are intended to govern the levels of constituents and characteristics in the main water mass unless otherwise designated and that they may not apply at or in the immediate vicinity of effluent discharges, but at the edge of the mixing zone if areas of dilution or criteria of diffusion or dispersion are defined in the waste discharge specifications.

This language clearly states that the Regional Board may allow a small mixing zone for acute toxicity if it will not adversely impact beneficial uses.

Priority: Low

Current Action: None needed

**Issue: Turbidity Objectives Variance**

Discussion: Turbidity objectives in the Basin Plan set limits on how much increases in turbidity above natural background are allowed. The amount of increase allowed varies depending on how much turbidity is present in natural background. In determining compliance with the

limits, appropriate averaging periods may be applied provided that beneficial uses will be fully protected. Dischargers are concerned that in some cases it will be very expensive to comply with the objectives and they question whether there is adequate information that documents the need for such stringent requirements. El Dorado Irrigation District has suggested that the objectives should be revised/site specific objectives adopted or policies added to allow staff to give site specific variances to the objectives.

Staff cannot give variances to Basin Plan objectives. The Basin Plan cannot be revised to include such a provision unless the amendment specifically identifies the circumstances under which a variance can be granted and what restrictions would apply in place of the objectives. There would need to be an analysis to assure that beneficial uses were fully protected. The same level of effort would need to go into this Basin Planning action as amending a water quality objective.

The Basin Plan provision allowing the use of averaging periods was adopted in 1994, at the request of dischargers. This provision allows considerable flexibility in applying the objectives. Nevertheless, compliance with the objectives continues to be a problem, especially in effluent dominated water bodies. The proposed action is for staff to investigate the issue and prepare a report that suggests a course of action. Appropriate action could be a policy change in the Basin Plan that would identify a reasonable approach, consideration of revision of water quality objectives, a determination that site specific objectives are the most reasonable approach, or something different.

Priority:

Low

Current Action:

None necessary because this is included under the high priority effluent dominated water body issue discussion (see issue #1).

**Issue:**

**Pesticide Management**

Discussion:

Chapter IV of the Basin Plan contains a description of the Memorandum of Understanding (MOU) between the State Water Board and the Department of Pesticide Regulation. Appendix item 21 contains the entire MOU. Also included in the chapter is a description of actions that the Regional Board will implement to achieve water quality objectives. One section describes actions that will be implemented to address pesticide problems. The Department of Pesticide Regulation requests that these two discussions be updated to reflect current conditions.

Priority: Low

Current Action: No action is proposed at this time. Noncontroversial, editing revisions can be included during the next general update.

**Issue: Rice Pesticides**

Discussion: In the early 1980s, pesticides used in rice culturing activities caused significant water quality problems in the Sacramento River and tributaries. A successful Rice Pesticide Control Program has been implemented and the water quality problems in the Sacramento River have been largely eliminated. Water quality problems still persist in tributaries to the Sacramento River. The Rice Industry recommends that the Basin Plan be amended to recognize the successes of the control program and to end the special treatment of the Rice Industry. They recommend that the Rice Industry's use of pesticides should now be regulated primarily by the Department of Pesticide Regulation in accordance with the MAA.

In a future update, language could be added to the Basin Plan explaining the success of the rice pesticide control efforts. This would not change any policy or regulatory provision. The Basin Plan clearly states that the Regional Board will work through the MAA in addressing pesticide problems. Chapter IV of the Basin Plan includes a Regional Board review process for assuring that water quality problems caused by pesticides are adequately addressed. The MAA process needs to be implemented in a manner that is consistent with the Basin Plan regulatory process. In past years, the focus has been on the rice pesticides because they were causing the most serious water quality problems. Now, more attention is being directed toward other pesticides (i.e., organophosphate pesticides) because monitoring information has been collected that indicates that they are a serious water quality problem. The point is that the emphasis is placed on the most significant water quality problems. Staff agrees that the major emphasis should not be on the rice pesticides, however, there are still concerns about levels of these pesticides in agricultural dominated water bodies. Some effort is needed to address agricultural dominated water bodies.

Priority: Low

Current Action: None

Current Resources: None

Additional Action: As the issue relates to agricultural dominated water bodies.

Additional Resource Requirements: See agricultural dominated water bodies issue.

**Issue: Standardized Effluent Limits**

Discussion: El Dorado Irrigation District recommends that the Basin Plan be amended to clearly articulate a set of monitoring requirements for each waste discharge requirement parameter, in order to eliminate ambiguities and to promote consistency between dischargers.

The Basin Plan contains narrative and numerical water quality objectives to protect beneficial uses. The Regional Board sets effluent limits to assure that the water quality objectives are achieved. In setting effluent limits, the Regional Board considers beneficial uses of receiving, receiving water quality, sensitivity of receiving water, the presence of other discharges, amount of available dilution and other factors. Each facility/discharge situation is unique and consequently, effluent limits vary between permits. The monitoring required at each facility is also dependent on a variety of elements, such as fluctuations in receiving water and effluent quality. A blanket set of monitoring requirements would likely be unduly burdensome in some situations and inadequately protective for other cases.

Priority: Low

Current Action: No action is proposed on this issue.

**Issue: Wet Weather Permit Limits**

Discussion: El Dorado Irrigation District stated that the Regional Board used dry weather flows to derive wet weather limits for the Deer Creek permit. They recommended amending the Basin Plan to clarify that water quality based mass limitations must take into consideration both increased flow and dilution where it occurs and not use dry weather flows to derive wet weather limits.

This is a permitting issue and staff understand that the issue has been resolved. The Basin Plan allows the Regional Board to allow for dilution in setting permit limits.

Priority: Low

Current Action: No Basin Planning action is proposed at this time.

**Issue: Discharge Prohibition for Sacramento River**

Discussion: The Basin Plan, when it was originally adopted in 1975, contained a prohibition of discharge of municipal and industrial wastes to the Sacramento River from the confluence with the Feather River to the Freeport Bridge. At that time, there were several different discharges that entered this segment of the River. The rationale for the prohibition was that this was a high use area for contact recreation and the Regional Board wanted to encourage construction of regional facilities that would discharge outside the area. The Sacramento Regional County Sanitation District (SRCSD) ended up being the Regional facility. West Sacramento decided to transport their effluent to a discharge point downstream of the prohibition area (near Clarksburg downstream of the SRCSD discharge). In 1991, at the request of the City of West Sacramento, the prohibition was amended to allow the discharge from City when the City's Clarksburg outfall line is at its maximum hydraulic capacity and when Sacramento River flow is greater than 80,000 cfs. The rationale for allowing this discharge was, in part, that these high flows would occur in the winter when there was limited use of the River for contact recreation and when there was a large amount of dilution. The City of West Sacramento is now requesting that the prohibition for the City be removed entirely. In order to remove the prohibition, studies would need to be completed that documented that beneficial uses would not be impacted if this was done. This section of the River is still a high use area.

Priority: Low

Current Action: The most effective way of proceeding on this issue is to consider the request as part of a report of waste discharge. Then staff can evaluate the potential impact of the discharge and determine what effluent limits might be appropriate.

**Issue: Nonpoint Source Management Measures**

Discussion: The US Department of Interior, Bureau of Land Management recommended that the Basin Plan be amended to include region-wide nonpoint source management measures to assure consistent regulation of nonpoint sources across the region.

Chapter IV of the Basin Plan does contain significant descriptions of the programs that are implemented to address nonpoint source problems. The chapter also references the statewide Nonpoint Source Management Plan, which describes the statewide framework for working on nonpoint source problems. The statewide nonpoint source management plan is currently being updated, as part of the process of addressing Coastal Zone Reauthorization Act requirements. The Basin Plan acknowledges that nonpoint source problems are the most significant water quality problems that need to be addressed. A continuing concern has been lack of resources to direct at nonpoint source problems.

Priority: Low

Current Action: At this time, staff believes more progress could be made by focusing Regional Board attention on high priority nonpoint source water quality issues and assisting State Board in development of the statewide management plan.

Current Resources: None

**Issue: TMDL Priority for OP Pesticides**

Discussion: Section 303(d) of the Clean Water Act requires states to adopt a list of impaired water bodies every two years. The list is to include water bodies “*where it is known that water quality does not meet applicable water quality standards, and/or is not expected to meet applicable water quality standards, even after the application of technology-based effluent limitations required by Sections 301(b) and 306 of the Act*”. Standards are defined in CFR to include beneficial uses, water quality objectives (narrative and numerical) and antidegradation requirements. For 303(d) listed water bodies, the State is required to establish TMDLs for the pollutants impacting water quality. States are required to establish a time schedule for completing TMDLs and identify priorities. The 1998 list adopted by the Regional Board and subsequently approved by State Water Board included several water bodies including the Delta and major tributaries to the Delta for the organophosphate pesticides chlorpyrifos and diazinon. In adopting the list, the pesticides were identified as a high priority for development of a TMDL. The Department of Pesticide Regulation, Novartis Crop Protection and Dow AgroSciences recommended that the Regional Board revisit the assignment of high priority and the time schedule for developing TMDLs for these pesticides and that risk based assessments should be factored into the prioritization. Novartis Crop Protection specifically requested that the probabilistic risk



assessments supplied by Novartis and Dow AgroSciences be incorporated into the process. US EPA supported the listing of this work as high priority. Dow also wanted to see a specific discussion of the data used to make the prioritization decisions.

Even though TMDLs are ultimately incorporated into Basin Plans, the triennial review process is not the appropriate forum to consider this particular issue. The list will be reviewed again in the next update cycle, which is scheduled for the year 2000. However, the Regional Board considers these two pesticides to be among the most serious water quality problems in the Region. Their widespread occurrence at levels of concern in important water bodies throughout the Region is a primary reason for the high priority. Staff has previously provided to interested parties a listing of most of the pertinent information that was used in making the evaluation on priorities. Among other things, the Regional Board compared levels in receiving waters to US EPA criteria, criteria developed by the Department of Fish and Game, available toxicity information, and other information provided by interested parties. In addition, the risk assessment provided by Novartis was reviewed by staff and factored into the Section 303(d) listing decision. No risk assessment has yet been provided by Dow.

Priority:	Low
Current Action:	None
Current Resources:	None
Additional Action:	The Basin Planning activities associated with development of TMDLs for the OP pesticides.
Additional Resource Requirements:	0.5 pys per chemical per year

**Issue:** **TMDL Development - In General**

Discussion: Section 303(d) of the Clean Water Act requires states to adopt a list of impaired water bodies every two years. The list is to include water bodies *“where it is known that water quality does not meet applicable water quality standards, and/or is not expected to meet applicable water quality standards, even after the application of technology-based effluent limitations required by Sections 301(b) and 306 of the Act”*. Standards are defined in CFR to include beneficial uses, water quality objectives (narrative and numerical) and antidegradation requirements. For 303(d) listed water bodies, the State is required to establish

TMDLs for the pollutants impacting water quality. States are required to establish a time schedule for completing TMDLs and identify priorities. Commenters state that development of TMDLs for pesticides will be difficult until guidelines are developed for regulating constructed agricultural conveyance facilities and waterways dominated by agricultural drainage.

Again, this is more appropriate for the Clean Water Act 303 process. However, staff recognizes the difficulties and challenges that are presented in developing TMDLs. As is indicated in the Section 303(d) list that was adopted in 1998, the mainstem rivers and Delta are the highest priority and should be addressed first. The tributaries will have to be addressed, to some degree, to complete TMDLs in the mainstem rivers and Delta, but the tributaries will not be the focus of the first phase of TMDL work.

Priority: Low

Current Action: None necessary

**Issue: Stormwater Receiving Water Limits**

Discussion: The City of Stockton has received a stormwater permit that requires full compliance with receiving water objectives without allowance for a mixing zone. They believe that the Regional Board did not consider the availability of a mixing zone.

This is a permitting issue. The Basin Plan clearly allows the Regional Board to designate mixing zones within which water quality objectives will not apply provided the discharger has demonstrated to the satisfaction of the Regional Board that the mixing zone will not adversely impact beneficial uses. Also, the Basin Plan indicates that acute toxicity mixing zones “will generally be limited to a small zone of initial dilution in the immediate vicinity of the discharge”. In the Stockton case, staff determined that the discharger had not demonstrated that a mixing zone would not adversely impact beneficial uses. Therefore, no mixing zone was allowed.

Priority: Low

Current Action: None necessary

**Issue: Wastewater Disposal in Amador County**

Discussion: Amador Regional Sanitation Authority operates and maintains reclaimed wastewater transmission and storage facilities for several public entities in Amador County. The facilities are aging and the Authority states that the 30-year term for disposal will expire in the year 2008. They urge the Regional Board to allow some flexibility in the Basin Plan to allow for direct discharge of treated wastewater to surface water.

The Basin Plan contains a policy that encourages reclamation and reuse of wastewater and requires dischargers as part of a Report of Waste Discharge to evaluate reuse and land disposal options as an alternative to discharging to surface water. The only inflexible part of the policy is that the discharger has to evaluate reclamation and reuse options and demonstrate that they are not practicable before discharge to surface waters will be considered. This policy is critical in areas where the effluent could constitute a large percent of the flows in local streams during some parts of the year. Many comments were received, as part of this triennial review, indicating that facilities discharging to effluent dominated water bodies are having difficulty meeting water quality objectives. Many are seeking changes in the objectives to accommodate their discharges. The Regional Board is not anxious to initiate new discharges to surface waters where there is inadequate assimilative capacity. Under the circumstances, careful implementation of the existing reclamation and reuse policy would appear to be the best course of action.

Priority: Low

Current Action: None (Refer also to the issue on Basin Plan Amendment to Address Water Bodies Dominated by NPDES Discharges.)

**Issue: Biological Assessment**

Discussion: The narrative toxicity objective states that *“All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life... . Compliance with this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, and biotoxicity tests of appropriate duration or other methods as specified by the Regional Board.”* In addition, the Clean Water Act indicates that States shall adopt criteria based on biological monitoring or assessment methods and that states shall develop and publish criteria for water quality accurately reflecting the

latest scientific knowledge ... on the effects of pollutants on biological community diversity, productivity and stability. The Department of Fish and Game recommends that the Regional Board develop requirements for biological monitoring, using an accepted procedure such as the California Stream Bioassessment Procedure.

Staff assumes that what is being asked is that language be added to the Basin Plan that would require dischargers to use approved bioassessment procedures to measure compliance with the narrative toxicity receiving water limits. Bioassays have become an important tool for the Regional Board to use in assessing the impacts of effluents on receiving waters. Bioassessments have been used to evaluate the impacts of some types of discharges (i.e., urban creeks). Bioassessments have not been widely used to in the NPDES program because of the added expense to dischargers and because of the difficulties associated with interpreting results.

Priority: Low

Current Action: Before including a general requirement in the Basin Plan, staff believes that it would be appropriate to conduct a pilot study to evaluate integrating Bioassessments into the NPDES program. In addition, because of the importance of this issue to all permit holders, staff would also need guidance from the State Water Board on inclusion of this into permits.

**Issue: Policies for Controlling Agricultural Drainage in the San Joaquin River Basin**

Discussion: The Basin Plan contains specific language to reduce levels of selenium reaching the San Joaquin River and the Grassland marshes and channels. The Regional Board has adopted waste discharge requirements to implement applicable portions of the Basin Plan. The requirements allow a portion of the elevated selenium drainage to be routed around the Grassland and discharged to Mud Slough. The use permit for this activity runs out this year. A commenter recommends that portions of the Basin Plan addressing agricultural drainage should not be reopened at this time because it would be unsettling to ongoing efforts.

The Regional Board already has committed to initiating Basin Planning activities to deal with selenium and salt in the next few years. For selenium, the Basin Plan implementation program needs to be reevaluated and updated to reflect current conditions. Also, the use agreement for routing agricultural drainage water needs to be

renegotiated. For salt, the Regional Board has committed to developing water quality objectives and an implementation plan in the San Joaquin River.

**Issue:** **Rice Pesticide Objectives - *see issue on the issue entitled Water Quality Objectives for Carbofuran, Malathion, Methyl Parathion, Molinate, and Thiobencarb.***

**Issue:** **Site Wide Points of Compliance**

**Discussion:** California Mining Association recommended use of site wide compliance points rather than multiple points of compliance for separate discharge or release points within a single facility. They contend that this would provide greater flexibility for the site operator to focus pollution control efforts and provide water quality protection.

The Basin Plan contains water quality objectives that apply to waters of the state. Effluent limits are set to assure that water quality objectives are maintained in the receiving water. However, the property of some sites may include waters of the state (i.e., a stream might run through the site). These on-site waters of the state must be protected just like off-site waters of the state. In these cases, it is appropriate to regulate specific discharge points to the on-site waters of the state.

**Priority:** Low

**Current Action:** None necessary.

**Issue:** **Abandoned Mine Policy**

**Discussion:** Discharges from abandoned or inactive mines, particularly in the Sacramento River watershed, severely impair local receiving waters. These mines are by far the largest contributors of copper, zinc, cadmium and mercury to surface waters in the Region. Because the Delta and San Francisco Bay receive all upstream inputs, the effects of heavy metals and mercury may be intensified in these water bodies. There is a health advisory for the Bay and Delta limiting the consumption of fish because of elevated levels of mercury and copper water quality objectives have been exceeded in the Bay (discharges from the Central Valley are indicated to be a principal source of

copper). There is significant work underway at a few of the most important sites (Iron Mountain Mine, Walker Mine, Sulfur Bank Mine, and several sites around Lake Shasta). There are hundreds of other sites that have not been investigated to determine their contribution to local problems and downstream loadings. The US Department of Interior, Bureau of Land Management recommended that a comprehensive program be developed to address this issue.

Staff agrees that a comprehensive program is needed. As was previously mentioned, there is significant work underway at most of the major sites. In addition, a mercury TMDL effort has been initiated to address mercury problems in the Delta. This effort will need to include assessment of mercury loads from mine sites throughout the Region (see mercury TMDL Issue for more information). Resources are not available to complete most of this work.

Priority:	Low
Current Action:	None at this time.
Additional Action:	Develop and implement a comprehensive program
Additional Resource Requirements:	1.0 personnel year and \$100,000 in contracts funds annually.

**Issue: Yuba Goldfields**

Discussion:	The Yuba Goldfields Access Coalition is concerned about mercury residue in the pond sediments from historical mining being resuspended from current gold mining activities and transported to the Yuba River. This is considered a permitting issue. Currently, staff at the Regional Board is evaluating operations within the Goldfields through the normal regulatory process.
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The Coalition also commented that the high wildlife habitat values of the area should be recognized in the Basin Plan. The Coalition should submit information that supports changes to current uses of the Goldfields. Staff will review information submitted and determine whether there is enough information to propose Basin Plan revisions.

Priority:	Low
Current Action:	None
Current Resources:	None

Additional Action:	Review material. If material supports changing the uses, then propose revisions to the Basin Plan.
Additional Resource Requirements:	0.5 py for review and preparation of a Basin Plan revision